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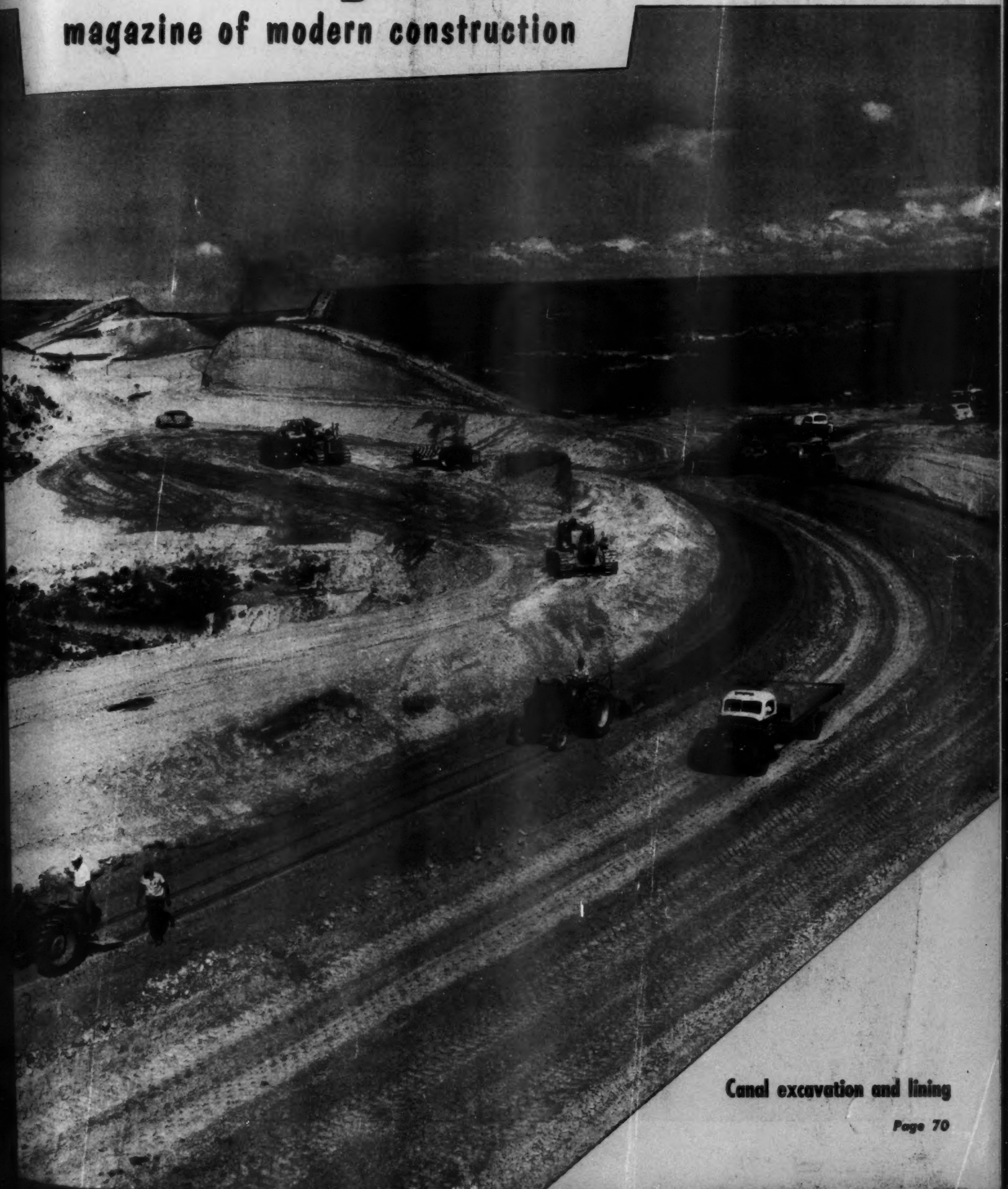
SCIENCES

AUGUST 1959

A Bittenheim Publication

Contractors and Engineers

magazine of modern construction



Canal excavation and lining

Page 70

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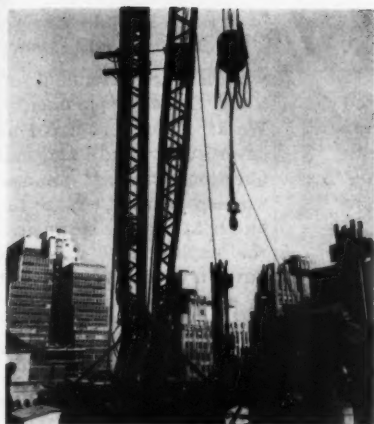
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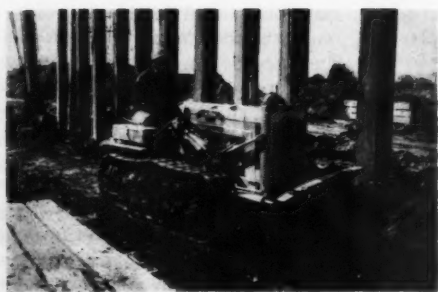
Contractors and Engineers

magazine of modern construction



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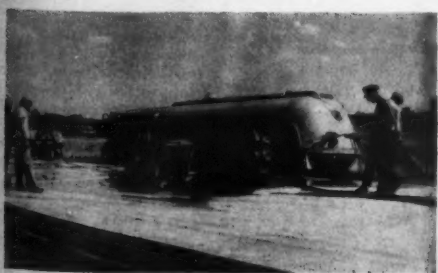
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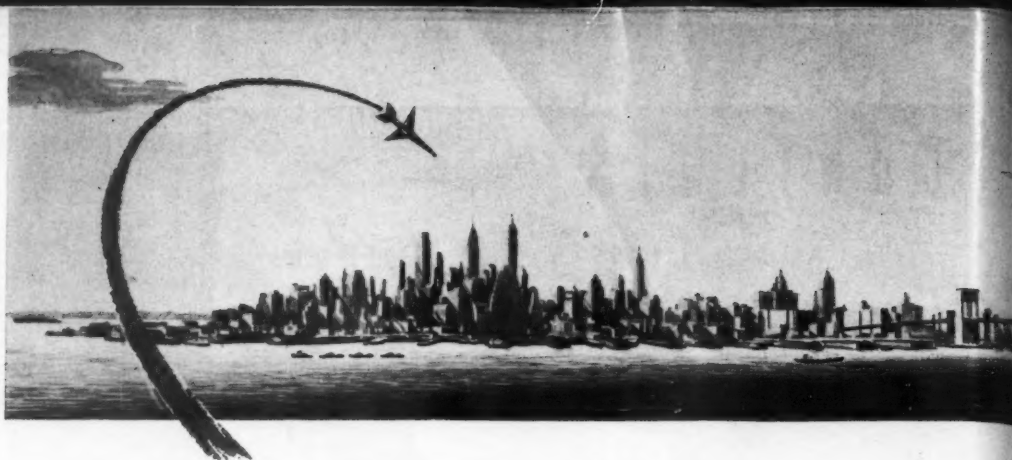
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FALL-OUT SHELTERS

The peaceful pursuit of pleasure during these midsummer vacation days has been disturbed by grim and ominous talk of nuclear attacks on this country, our chances for survival, and our preparation—or lack of it—for civil defense. The intercontinental ballistic missiles with their nuclear warheads, or even shorter-range missiles launched from lurking submarines, have rendered obsolete any plans for the rapid evacuation of large population centers threatened by conventional air raids. Some experts estimate that a maximum of 15 minutes' warning time is all that can be given to alert the populace that new agents of destruction are on their way. Others shave this more closely, and contend that anyone above the sixth floor of any building in a target city could not make an underground shelter in time.

Scientists offer little hope anyway to those who are within 20 miles of a direct hit by a big H-bomb. And the rest of the country would be imperiled by a blanket of radioactive fall-out for two weeks or more after the blast; hence the futility of evacuation plans. This lethal radiation cannot be seen or smelled and has no taste or sound. But despite this terror, scientists say there is no reason to adopt a fatalistic or defeatist attitude, since steps can

be taken to avert great loss of life.

Survivors of a blast can be protected from the deadly fall-out by suitable shelters. Already several European countries, including the Soviet Union, Sweden, Switzerland, and Finland, are planning or constructing such shelter systems. Governor Rockefeller of New York State made public last month the findings of his special task force committee on protection from radioactive fall-out. The governor has stated he will ask the state legislature to enact into law the recommendations of the task force on a plan of survival.

The basic element of the plan is a home shelter for every family. Built of 8-inch reinforced-concrete walls, the shelter should be large enough to provide twelve square feet of space for each individual. Thus a family of five would require a 10x6-foot room, supposedly built in the basement of a one-family house. The shelter would be equipped with a survival kit containing a two-week supply of food and water, a radio, and a radiation-detection device. Schools, apartment houses, public, commercial, and industrial buildings would have shelters to protect their occupants.

The task force committee includes John B. McMorran, a civil engineer

who is superintendent of the New York State Department of Public Works. Its report could not possibly cover every detail, and many obvious questions are left unanswered. One wonders what effect the terrific heat and heat of a fire storm accompanying the explosion of an H-bomb would have on a small home shelter built in a basement or built in the backyard. The report never discussed how people breathe when enclosed in a shelter for two weeks. An engineer might question the adequacy of shielding afforded by an 8-inch concrete wall. The contractors, who will be called upon to build such shelters, are concerned with their type of construction—must they be poured in-place, or can they be erected of precast members assembled at the individual site? If the latter, what about the joints and connections? Can they withstand great pressures without lapsing?

And, of course, nobody mentions who is going to pay for all this outfit for defense, or how long it will take to put a plan into effect. Nonetheless, the construction industry would do well to study the implications of this survival program, and do some planning itself as to how it can best serve the country in making the program work.

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A section of irrigation canal near McCook, Nebr., gets soil-cement lining. A spreader tractor with spreader distributes the cement, which is mixed with the soil by Seaman rotary tiller pulled by an International WD-40.

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High single lifts for bridge piers

Massive concrete piers—designed in cross section to facilitate single-lift placing and to eliminate construction joints—were built through the use of specially designed steel forms for the substructure of the \$22 million international bridge near Ogdensburg, N. Y. The mile-long span over the St. Lawrence River links Chimney Point, N. Y., with Johnstown, Ont., Canada. The forms—designed and fabricated by Blaw-Knox Co., Blawnox, Pa.—supported pours as high as 41 feet without external bracing or guys, and helped to minimize finish work. Heavy structural members, instead of tie rods, were used to resist concrete pressure in the unusually high single lifts.

Concrete placing

Barge-mounted cranes, equipped with 96-foot-long booms, lifted the buckets for concrete placing. Column forms were capped as a unit over a 1-foot-high stub, cast with the pier foundation, and positioned with leveling jacks. The column forms taper from top to bottom according to the height of the pier. The form units employed in casting the 41-foot-high pier columns measured $8\frac{1}{2} \times 12$ feet at the bottom and tapered to $8\frac{1}{6} \times 8\frac{1}{2}$ feet just below the pier cap.

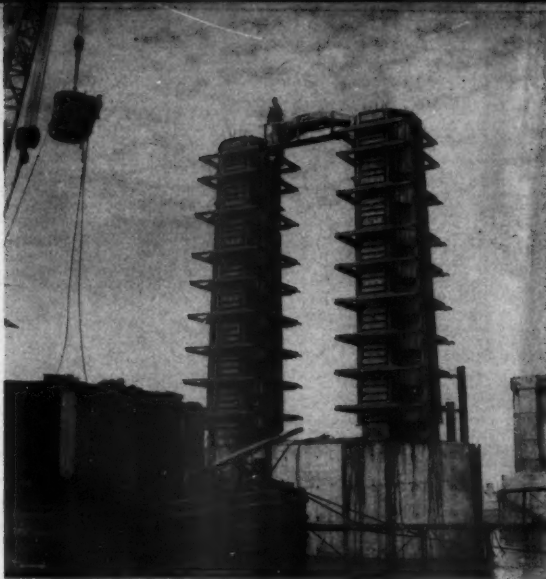
Concrete was placed at a rate of 1,000 cubic feet per hour and cured 24 hours. Stripping and repositioning the column forms took only 8 hours. Bolts were loosened, the bond broken, and the 20-ton unit was shifted to a barge. Bolts were retightened, structural members positioned, and the unit was ready for another concrete placement.

Support brackets for arch tie forms were set in column piers being cast. Holes were used to locate template bolts, which became anchor bolts for the supporting brackets. Side and end panels of pier cap forms were fitted over a 5-foot-thick stub cast with the pier column. The forms rested on screw jacks used for alignment and leveling. The single-unit arch tie and two pier-cap form sections were lifted in less than 3 hours.

The pier column forms were designed to withstand concrete pressure in excess of 2,000 pounds per square foot. Cross-sectional dimensions for arch ties vary from 12 to $12\frac{1}{2}$ feet, clear span, and $3\frac{3}{4}$ to $4\frac{1}{2}$ feet. The $8\frac{1}{2}$ -foot-thick pier cap is octagonal in shape at the top of the two column piers.

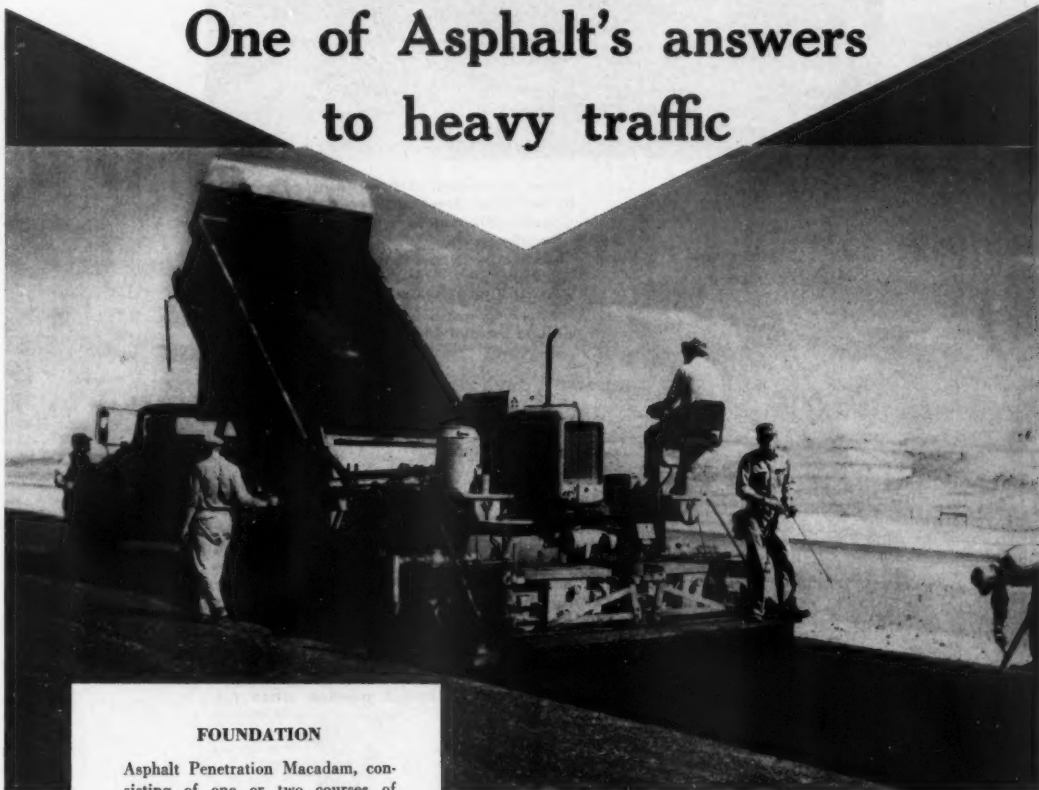
The main bridge spans will total $\frac{1}{2}$ mile in length. These will carry a 2-lane 26-foot-wide roadway 125 feet above the main St. Lawrence River channel. The superstructure is scheduled for completion in April, 1960, after which the span will serve as a principal link in the Penn-Canada Expressway, now under construction.

THE END



Forms, designed and fabricated by Blaw-Knox Co., support lifts as high as 41 feet without external bracing or guys, for the international bridge between Johnstown, Ont., Canada, and Chimney Point, N. Y.

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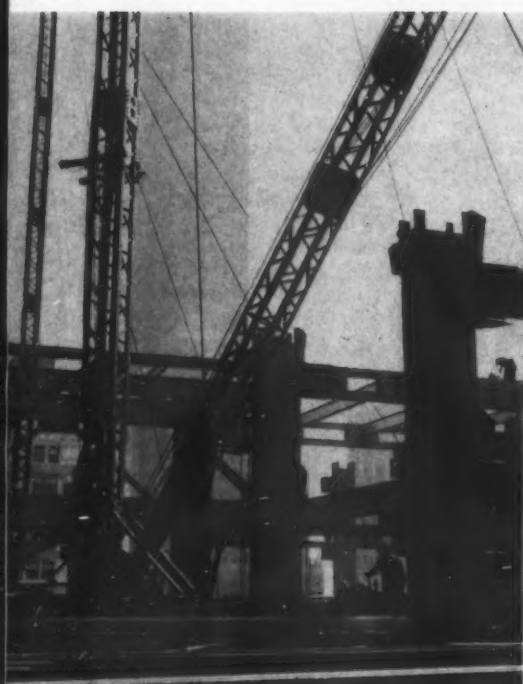


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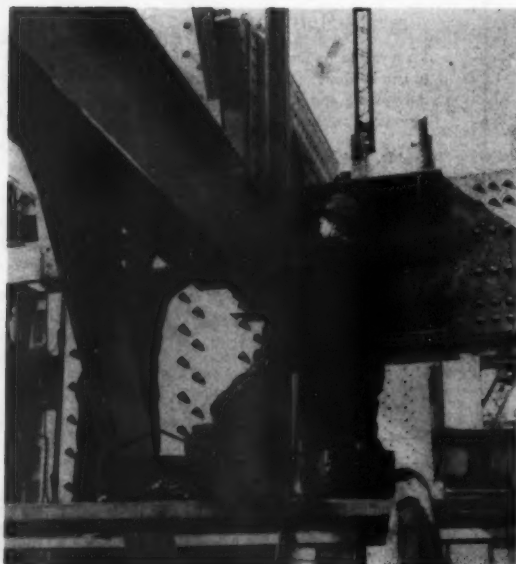
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Three heavy-duty derricks designed and built by Bethlehem Steel Co., erector on the 60-story Chase-Manhattan Bank building in New York, have two features that ease their operation. The swing-hoist operator uses a converted Lidgerwood 2-drum air-operated hoist to swing the heavy derrick, eliminating the need for turning it manually. The cable is reeved around the bull wheel of the derrick.



Hanna 48-inch air rams mounted on the 115-foot mast help push the 105-foot boom out from the vertical position. Since the $\frac{7}{8}$ -inch-diameter lead cable runs to hoists below the street level, and the weight of the cable increases as the derricks jump to higher floors, this arrangement overcomes the inertia of the cable. Rams automatically return to retract position when the valve is deactivated.



A steelworker with a Chicago Pneumatic Impact wrench tightens bolts at a beam-column connection. Bethlehem's modified turn-of-the-nut method assures proper tension on each bolt. Fitting bolts are tightened first to bring contact surfaces into bearing; then remaining bolts are tightened and given a minimum of one-half turn beyond the snug position. Fitting bolts are then "touched up."

Special units to turn derricks
and to push out 105-foot boom.

Ease derrick load and operation

by ANTHONY N. MAVROUDIS
field editor

The three 70-ton derricks being used to erect steel for the new 60-story Chase-Manhattan Bank building in New York City can take credit for a two-floors-per-week rate being maintained. The derricks, each with a 115-foot mast and a 105-foot boom, are guyed to the outside building columns as they are jumped two floors at a time.

Each of the heavy-duty derricks designed and built by the erector Bethlehem Steel Co., are equipped with two special units. One permits them to handle extremely heavy loads; the other eases the operation of the derricks.

Swing hoist

Three converted 2-drum Lidgerwood air hoists, located on the mast level as the derricks, are used to swing the rigs. The cable of the swing hoist is reeved around the bull wheel, allowing one operator to position the load of a derrick. This eliminates the need for manual labor in swinging the heavy derricks.

Hydraulic rams

Two Hanna air-operated 48-inch hydraulic rams have been installed on each mast to help push out the boom from a vertical position when booming out. The pair of rams also help in maintaining the boom position whenever loads are being placed around the derrick area.

These rams overcome the weight of the $\frac{7}{8}$ -inch-diameter lead cable from the hoisting engines located below the street level. The weight of this cable increases as the building height increases. This would tend to "freeze" the boom in the vertical position if these rams did not push the boom out so that it can boom out by itself. It is possible when the 48-inch rams are fully extended. Equipped with a 4-way spring valve, the spring-loaded ram automatically returns to its retracted position after the swinging-hoist operator deactivates the control valve. Hanna flow controls on the ram are used to control the rate of extension or retraction.

CONTRACTORS AND ENGINEERS

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Whenever lifts require the boom in high position, or within the 48-inch travel of the ram, the boom will automatically boom back by itself because of the weight of the lead cable. Here the rams are extended to prevent a coming back to the vertical. The swing-hoist operator has to maintain the flow of air to keep the rams in this extended position.

The derricks are powered by American 3-drum hoists having a 20,000-pound lead-line pull. Hoists are driven by gasoline motors and equipped with air friction controls. The hoists were located below the street level until the derricks reached the 39th floor; then smaller hoists were installed at the 37th floor. Working from this level, these hoists will power the derricks for the remaining height of the building.

Bolted connections

Bethlehem is using over 500,000 A-325 high-strength bolts, ranging from 1/2 inch to 1 1/4 inches in diameter, to connect over 50,000 tons of steel going into the building. A total of 16 Chicago Pneumatic impact wrenches are being used, with Bethlehem's modified turn-of-the-nut method, to make the bolted connections. Air is supplied to the impact wrenches, as well as to the air swing hoists and hydraulic rams, by a bank of three Chicago Pneumatic 365-cfm compressors located at street level. The compressors feed two air receivers that supply a 3-inch-diameter vertical line. This line makes it possible to tap off air at any level as erection progresses.

The modified turn-of-the-nut method devised by Bethlehem assures the proper tension in each bolt. The first step is the fitting operation. Fitting bolts are sufficiently tightened in a set pattern to bring the contact surfaces into bearing. The remaining bolts are then tightened to a snug position and given a minimum of one-half turn beyond this. The bolts used for fitting up are then "touched up" to make sure they have the proper tension.

The half-turn of the bolts beyond the snug position is determined by the wrench operator, who uses a system of dots engraved at 180 degrees on the chuck. This system assures that the tension on bolts is equal to or

(Continued on next page)



A cross beam goes into position at the 19th floor level. Air for the impact wrenches used to tighten the bolts is supplied by a bank of compressors at street level.

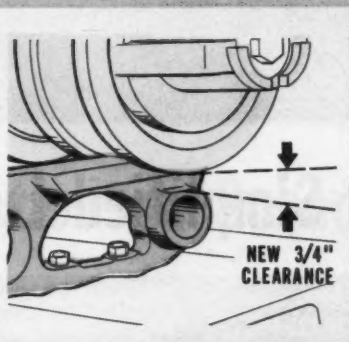
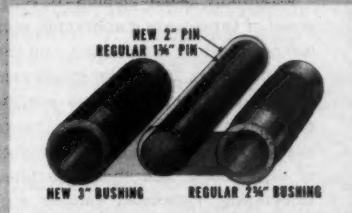
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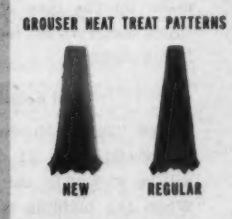
30% STRONGER PINS AND BUSHINGS have more wear area to extend life. The big track pins are 1/4" larger in diameter and heat-treated deep to resist wear... pins will not bend and cause uneven wear. The large contact areas of the bushings are hardened deep, both inside and out. Under field conditions these bushings have lasted up to 44% longer than regular bushings.



STRONGER, LONGER, HIGHER TRACK LINKS are 3 lb. heavier, 1" longer and 1/4" higher. New length means fewer track sections are required. Increased height gives up to 1/4" more link pin boss-roller flange clearance. Improved steel used in these links permits 80% deeper rail hardening and greater strength—pins and bushings stay tight in the links even under the roughest application.



NEW TRACK SHOE GROUSERS ARE 20% THICKER at the tip and are hardened much deeper than on regular shoes. The new shoe as a whole is bigger and heavier to resist bending, impact and wear. Track hardware used with the new track components is stronger—bolt diameter increased from 3/4" to 7/8".



NEW DESIGN BORALLOY SPROCKET REPLACEMENT RIMS are available to accommodate the increased pitch of the longer links and bigger track bushings. Teeth are precision-machined to provide exact fit with track bushings—a major contribution to longer bushing life.

SEE YOUR CATERPILLAR DEALER for more information on extending your D8 track life. He has parts you can trust and round-the-clock service. See him today.

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Steelwork grows around the derricks. More than 50,000 tons of steel going into the building is being connected by over 500,000 high-strength bolts.

greater than that required by specification.

Heavy column sections

The new \$94 million building, located on a 400x170-foot lot bounded by Nassau, Liberty, William, and Cedar Streets in lower Manhattan, will be supported by 40 columns rising 820 feet above the street level. Among the heaviest ever fabricated, the columns are designed to support loads up to 7,000 tons and are being brought to the site in sections up to 36 feet long and weighing 52 tons.

Essentially, each column is composed of three plate diaphragms, plus layers of 48-inch plate making up the two wide faces. The center diaphragm is I-shaped, while the two outside diaphragms are shaped like heavy channels. Depending on the number of plates used, and their individual thicknesses, completed column sections include layers of plate up to 6½ inches thick.

Columns are supported on steel grillage bases that rest on concrete foundations located 100 feet below the street level. The 40½-ton grillages are made up of Bethlehem 36-inch I-beams weighing 150 pounds per foot. A forged billet, 19 inches thick and weighing 12½ tons, forms the top section of the grillage. The columns rest directly on these billets, which have been milled, top and bottom. The four rows of 10 columns each make up the core of the building, which measures 281 feet 6 inches x 107 feet 6 inches.

Cool building

Two long established records for air conditioning of office buildings will be broken by the new structure. When the building is ready for occupancy, in mid-1960, it will have the largest air-conditioning system for a single commercial structure. Two of the four refrigeration machines are the largest units of their type ever produced. They will provide a total daily cooling capacity of 9,140 tons, equivalent to the effect of that much ice melting every 24 hours. Until this project, the Merchandise Mart in Chicago, with 8,500 tons of cooling

capacity, held the record for 25 years.

Each of the new Carrier 3,500-ton centrifugal-type units, driven by steam turbines, will be located with a standard 1,000-ton Carrier machine adjacent to air-handling apparatus on the 11th and 31st floors. From these levels, which are two stories high, air will be sent at high velocity to control outlets rimming each floor, as well as to interior spaces and the six underground levels.

Chilled or warm water also circulated to 6,745 Carrier Weathermaster units—the largest number ever to be installed in one building—will neutralize transmission of extremes of

heat or cold through the glass area comprising two-thirds of the building skin. These motorless devices maintain desired conditions automatically.

Personnel

Bethlehem personnel in charge of the job includes G. P. Adair, erection manager; John Stuart and C. E. Adams, superintendents; W. G. Turner, assistant superintendent; and D. E. Wagner, project manager. Turner Construction Co., New York City, the general contractor on the job, has E. K. Abberley, senior vice president, running the project from the company headquarters; M. H. Parsons,

vice president in charge of the project office; and William Black as project superintendent.

Skidmore, Owings & Merrill is the architect. Moran, Proctor, Mueser & Rutledge is the substructure consultant, and Weiskopf & Pickworth is the superstructure consultant. The

New Brunner & Lay branch

Brunner & Lay-Eastern, Inc., has opened a branch at 43-11 Eleventh St., Long Island City, N. Y. The branch carries a complete line of air tool accessories and blast-hole rock drilling tools.



Texaco Simplified Lubrication Plan Key



W. N. EVANS (left), Contractors Manager for Rocky Reach Contractors,

points out that the general high production job can be attributed to extended machine life and decreased downtime. He specified Texaco lubricants for the project because of his thorough experience with these products in previous Western dam projects. E. S. Saunders, Texaco Sales Representative, helped him choose the lubricants required for all equipment on the job.



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A 50-FOOT SECTION of .118-inch prewrapped 6-inch pipe is positioned by an International Superior TD-14 side boom on this 136-mile section of a gas pipeline for the North Carolina Natural Gas Corp. H. L. Gentry Construction Co. is the contractor on the project.



Rocky Reach Dam and Powerhouse on the Columbia River is being constructed for the Public Utility District No. 1 of Chelan County, Wenatchee, Washington. The Project was designed by Stone & Webster Engineering Corporation and construction is under their supervision.

Contracts approximating \$70,000,000 for its construction were let in two stages. Both contracts were held by a contracting group called Rocky Reach Contractors. Members of the group are L. E. Dixon Co., The Arundel Corporation, Guy F. Atkinson Co., The Hunkin-Conkey Construction Co., and American Pipe & Construction Company. Contractors Manager is W. N. Evans, Vice President of L. E. Dixon Company.

Large gas-pipeline job moves fast in tough areas

A 222-mile pipeline installation for the North Carolina Natural Gas Corp. has recently been completed by the H. L. Gentry Construction Co. The project is part of the 650-mile system now being built by the gas company to tie into a 22-town distribution program for the northern sector of the state.

Gentry worked two spreads: one from a field office in Lumberton, N. C., and the other from a field office out of Wilson. The Lumberton operation laid 86 miles of 4, 6, 8, 10, and 12-inch lines; the Wilson project laid 136 miles of 3, 4, 6, and 8-inch lines.

The Lumberton crew placed 7,500 feet per day, although hampered by heavy rains. An estimated 47,000 feet was laid under extreme swampy conditions, and two major river crossings were negotiated.

Swamp areas were also encountered by the Wilson force, which laid 1½ miles of pipe per day with its eight International Superior side-boom and dozen tractors. The Lumberton crew used 16 International crawlers, plus three International power units.

Goodyear chief honored; personnel changes made

The American Society for Testing Materials has presented its Award of Merit to E. G. Kimmich, chief engineer of industrial-products design for the Goodyear Tire & Rubber Co., Akron, Ohio. The award was made in recognition of Kimmich's distinguished service to the society.

Goodyear's former production manager of chemical plants, J. R. Creager, has been assigned to the office of vice president of production. In his new post, he will work on special projects in connection with chemical-plants engineering; he will continue to supervise production operations at the firm's Point Pleasant, W. Va., chemical plant.

J. W. Kosko, former division foreman of the company's Chemigum plant, succeeds Creager as manager of chemical production.

John C. Dawson has been transferred to the truck-tire sales staff at Akron, Ohio, headquarters. He was previously a field representative for the company.

Gar Wood reorganizes

Harold H. Hippler has been named assistant director of truck and construction-machinery sales for Gar Wood Industries, Inc., Wayne, Mich. D. J. Byrd takes over Hippler's former post as general sales manager of truck equipment. The new assistant general sales manager of truck equipment is H. J. Howerth.

B-E names plant manager

Ross C. Byers has been appointed acting works manager of the Evansville, Ind., plant of Bucyrus-Erie Co., South Milwaukee. He had been general superintendent of manufacturing at the company's Erie plants.

Rocky Reach Construction on Schedule

Lubricants are needed to handle all major elements on the Rocky Reach Dam project. That's why the Texaco Simplified Lubrication Plan keeps things running smoothly, cuts handling and storage costs, helps personnel sidestep the dangers of misapplication, and here's what Contractors Manager W. N. Evans has to say about it:

"High production we've been getting from our project at Rocky Reach Dam is due in large measure to the service that goes with it—really help equipment on the job. We've had little downtime and getting longer machine life."

Evans and the local Texaco Lubrication Engineer select six basic Texaco lubricants to meet the requirements of the project after a complete lubrication survey. Their selections: 1) *Texaco Ursa Oil* for all super-charged engines; 2) *Texaco Heavy Duty* for all other diesel and gasoline

engines and air compressors; 3) *Texaco Rock Drill Lubricant EP*; 4) *Texaco Marjak Multi-Purpose 2* for all grease applications; 5) *Texaco Track Roll Lubricant*; and 6) *Texaco Crater Fluids* for open gears and wire rope.

Your Texaco Lubrication Engineer can show you how much the Texaco Simplified Lubrication Plan has saved other contractors—how it can help you. Call the nearest of the more than 2,300 Texaco Distributing Plants, or write Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

CONSTANT PROGRESS IN OIL'S FIRST CENTURY

TEXACO
Throughout the United States
Canada • Latin America • West Africa

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 254

HIGHWAYS—an international link

How the U.S.A. extends a helping hand

with training programs; their effect on a

participating group of foreign technicians

• Highways have been a major factor in the development of this country. By helping other countries with their highway programs, the U. S. A. is promoting better international relations all over the world. How this is done is described by Ellis L. Armstrong, Comr., U. S. Bureau of Public Roads, in Part 1. This excerpt from his address to the International Road Federation Board of Directors appraises the exchange training program.

• The effects of this program on a visiting foreign technical mission are discussed by C&E editor, Bill Quirk, in Part 2, based on material gathered in Poland during his visit to Europe last year.

• Current highway practices in Poland are related in Part 3 by Stefan Rolla, Central Office of Public Roads, Poland. Engineer Rolla was a member of the four-man team that visited this country at the invitation of the U. S. Department of State and Bureau of Public Roads.

Part 1 America's highway program

Through the sponsorship of the International Cooperation Administration, highway officials from nations are being brought to this country to learn how we construct, maintain, operate, and administer our highway systems. Last year—1958, fiscal year 1958—groups from different nations came to the United States for this purpose. These groups ranged in size from one to two persons. In all, 150 officials received 636 man-months of training from us under this program last year.



Ellis L. Armstrong
Commissioner
of the U. S. Bureau
of Public Roads

Well in advance of the arrival of each group, a plan is developed, designed to give the most benefit to each of the individuals during his visit. This necessitates a bit of tailoring. The interests of the individuals who comprise each group may, for instance, be centered upon one phase of highway activity, say the economic aspect of highway transportation. Another group may have a wide variety of interests. These may be individual interests. They may want to know more about our highway bridges, about traffic control equipment, or about highway administration. In order to insure that each participant derives as much benefit as possible from this program, we endeavor to develop one or more schedules of activities on the basis of individual interests of the group.

In this program, we have always had the wholehearted cooperation of the state highway departments. They can always rely upon a helping hand from the International Road Federation through its executive director, Robert O. Swain, in Washington.

Broad program

The training program, while tailored to individual interests, follows a broad pattern. Upon arrival in this country, the group spends some time with the Washington office of the Bureau of Public Roads in a brief session. In these sessions, the group learns about our highway system, road construction and maintenance, our research programs, variations

Weather bad...

No. 955 terrific...

job on schedule!

Bad weather cut work days during the first six months to 20 per cent, but the highway project stayed on schedule. Reason: a Caterpillar No. 955 Traxcavator with Side Dump Bucket.

Gulf Bitulithic Co., Houston, Texas, first tried a drag line on a 2½-mile widening job on U.S. 75 at Conroe, Texas. Production was poor in the shallow cut. Switching to a No. 955, five-yd. trucks were loaded in an average time of three minutes; four buckets to the truck.

"We increased production 25 per cent," says Superintendent Thomas "Red" Brown. "I like that Side Dump Bucket. You can't beat it!"

In-line loading of trucks with the Side Dump Bucket paid off in less traffic congestion on the busy highway, and it also avoided tearing up the subgrade with twisting and turning.

Side Dump Buckets are available on all three Traxcavators: No. 977 (2¼ cu. yd.), No. 955 (1½ cu. yd.) and No. 933 (1¼ cu. yd.). Other buckets, teeth, 'dozers and forks help make a Traxcavator the most versatile excavator-loader.

Ask your Caterpillar Dealer to demonstrate on your job how a Traxcavator can make money for you. He stands behind every machine he sells with round-the-clock service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

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**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**



No. 955 excavates part of a total of 19,000 yd., preparing for base an area 20 ft. wide, 12-13 in. deep. Cuts are made by Cat No. 12 Motor Grader and windrowed. Job is part of a \$1,828,366 project by Gulf Bitulithic Co. on U.S. 75, to be part of the Interstate Highway System.



Says Operator F. H. Leggett: "I can move over 100 cu. yd. a day more with the side dump than with other loaders. It doesn't spill dirt because you don't have to jockey for position. A Traxcavator is easy to operate and I'm less tired at night. It's the best on the market."



matic conditions, legislation and other factors as they affect highways, and other broad phases of our activities.

These sessions are conducted upon discussion rather than a lecture basis. Material prepared by the bureau is supplied to the officials in each group in advance so that the discussions will center as far as possible on matters pertinent to the interest of each individual.

After the briefing sessions, a participant may go to a number of places, depending upon his particular interest. It may be to one of our divisions in Washington, to one of our field offices, or to our laboratory. It might be to a state highway department, to a tour of construction projects, to equipment manufacturing plants, or to a number of other places where we think he may get the information or experience of most value to him.

In addition to these individuals sponsored by the International Cooperation Administration, the bureau has provided or arranged training for engineers sponsored by the United Nations. Assistance has also been rendered to visitors, such as contractors, engineers, and others connected with the highway industry who have been referred to the bureau by the IRF, the Department of State, or some other official agency.

This, then, is one category of activity in the international role of America's highway program. The second is a program of technical and economic assistance to other nations. This program might be subdivided into two parts. Since 1930, the United States, through the Bureau of Public Roads, has assisted the republics of El Salvador, Honduras, Nicaragua, Costa Rica, and Panama in the construction of the Inter-American Highway.

The bureau has also provided technical and, in some cases, financial assistance to some of these Central American countries in the development of their road systems other than the Inter-American Highway. These include Guatemala, Nicaragua, and Panama. Technical assistance was also provided in South America to Ecuador until the Manta-Quevedo Highway was completed last year.

Forty-two bureau engineers and 63 other bureau personnel are now overseas in ten different countries. These countries are the Philippines, Turkey, Ethiopia, Lebanon, Liberia, Jordan, Iran, British Guiana, Nepal, the Sudan. In these countries, the bureau is assisting in setting up highway organizations and facilities for research, construction, maintenance, and operation of highways. In other words, it is helping these people to help themselves. Bureau personnel are engaged in training equipment operators and laboratory technicians. They are aiding these countries to locate materials for highway construction and maintenance. They are advising on matters relating to methods, equipment, procedures, and management.

This nation should derive a great deal of satisfaction from the results

that have been obtained from our foreign assistance in highway programs. We well know the benefits of good roads in this country. The same benefits are now accruing to those we have helped abroad. We, too, learn much from those who come to American shores under the program.

Part 2 Polish technical mission to the U. S.

At the invitation of the U. S. Department of State and the Bureau of Public Roads, a 4-man mission from Poland visited this country for 23 days in the fall of 1957. During this period, the visitors were in Washington seven days, and for the remaining



Aleksander Gajkowicz, Director, Central Office of Public Roads, Poland.

16 days were on a 3,000-mile trip over the highways of Maryland, Pennsylvania, Ohio, New York, New Jersey, Massachusetts, and Connecticut. The mission included Marion Olewinski, Undersecretary, Ministry of Communications; Aleksander Gajkowicz, Director, Central Office of Public Roads; Eugeniusz Hildebrandt, professor, Warsaw Polytechnic; and

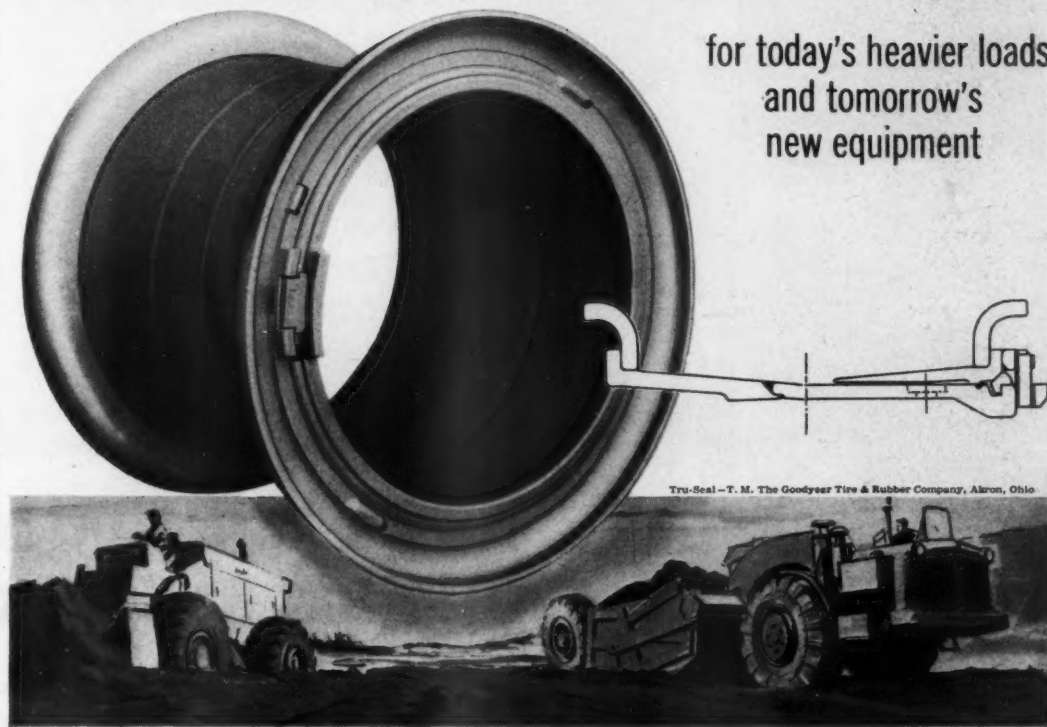
Stefan Rolla, manager, technical division, Central Office of Public Roads.

On their return to Poland, the engineers spoke at meetings of N.O.T. (Naczelna Organizacja Techniczna), the chief technical organization. Given at three different times, two weeks apart, the talks drew audiences of more than 300 Polish engineers on each occasion. Director Gajkowicz spoke on "Management of Roads in the U.S.A." Engineer Rolla discussed "Technical Aspects of Road Construction in the U.S.A." Professor Hildebrandt in his address described "Construction of Bridges in the U.S.A." The talks were followed by question-and-answer periods and general discussions.

The speakers also expanded their
(Continued on page 13)

Introducing The New Earth-Mover Rim

for today's heavier loads
and tomorrow's
new equipment



Tru-Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

To meet the increased tonnages and the higher speeds of today's and tomorrow's earth-moving equipment, Goodyear presents a whole new line of heavier, stronger rims.

The new Earth-Mover Rim offers these standout advantages in every size from the smallest to the largest:

Extra thickness and weight to withstand greater horsepower, greater tire pressure and heavier loads. Down time reduced to a minimum.

Heavy-duty bead seat band driver—to prevent slipping.

Sealing ring—Goodyear's famous Tru-Seal principle provides positive air seal.

The Goodyear Earth-Mover Rim is now available in 29-inch and 33-inch diameters. These fine job-fitted rims are your best insurance against premature tire and rim failure.

Next time you need rims, why not benefit by Goodyear's incomparable experience in building rims of every kind and size for all types of vehicles. See your local distributor, or write:

Goodyear, Metal Products Division, Akron 16, Ohio.

Your tires go farther on RIMS by

GOODYEAR

MORE TONS ARE CARRIED ON GOODYEAR RIMS THAN ON ANY OTHER KIND

For more facts, use Request Card at page 18 and circle No. 256

Easy way to figure
blasting cost per
yard/ton of rock



Now...a HIP POCKET edition of the Atlas BLASTING COST CHART

Here's a new 1959 Atlas Blasting Cost Chart that goes right out on the job with you—helps you record the cost data you need to protect your profits.

The original Blasting Cost Chart, with instruction book and Slide Rule, is being used successfully by hundreds of operators. Now, to make it more convenient, Atlas has added this "hip-pocket" edition. With it you can compare results from blast to blast to determine methods that pay off best. It helps you assemble quick cost facts on drilling, secondary breakage, digging, hauling, and crushing.

Your Atlas representative will be glad to show you how to use the new "hip-pocket" Cost Chart. He has a kit full of information that may help reduce your costs and protect your profits. Ask him for details, or write us direct.

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Ask your Atlas representative to show
you the electric match demonstration
... See why Atlas E. B. Caps lead
the field in dependable performance.



For more facts, use Request Card at page 18 and circle No. 257

CONTRACTORS AND ENGINEERS

Continued from page 11)

addresses into detailed articles which were published in subsequent months by *Drogownictwo*, a technical magazine devoted to highway problems and construction. The mission also brought back over 150 books, plus reports and papers of a technical nature, and many of these have been translated into Polish for use in that country.

Adopt U. S. practices

As a result of the mission, several American practices, in both laboratory and field have been introduced to Polish highway engineers. These include the Kelly ball for testing concrete, the Marshall method for bituminous mixes, techniques used in the building and reconstruction of bridges, and geophysical investigations by measuring electrical resistance of the ground.

The Polish government subsequently invited a U. S. mission to visit Poland, and an official party of three U. S. Bureau of Public Roads engineers just recently returned from a 3-week trip (June 14 to July 5) to that country. The group included Rex S. Anderson, regional engineer, Region 3, Atlanta, Ga.; S. E. Farin, regional engineer, Region 7, San Francisco, Calif.; and H. A. Radzikowski, Chief, Development Division, Washington, D. C.

N.O.T., the chief technical organization in Poland, has about 160,000 members from 18 engineering associations representing all branches of the profession. Throughout Poland there are over 200 district and regional branches of these associations.

Henri Lesniok,
secretary-general,
N.O.T., Poland.



In addition, N.O.T. manages 21 engineering clubs and the technical museum, and publishes 47 technical reviews, two of which are weeklies and the remainder monthlies. It also organizes meetings, conferences, and congresses of a technical nature both at home and abroad, and contributes to the training of engineers and technicians, as well as to the development of engineering in Poland.

Professor H. Lesniok, who teaches higher geodesy and astronomy at Warsaw University, is secretary-general of N.O.T.

Part 3 Highway engineering in Poland

Excluding urban highways, Poland has a road network of 177,022 miles. Of this total, 103,936 miles are unimproved; 10,240 miles are dirt roads that are graded and drained; and 62,846 miles are paved. Of the paved roads, 18,854 miles have bituminous or cement-concrete pavements with bituminous predominating. The remaining 43,992 miles are either water-bound macadam or crushed stone or

gravel with surface treatments. With a population of 28 million, Poland has 712,000 licensed motor vehicles, including motorcycles. In 1958, Poland spent about 2,655,000,000 zloties (\$110,625,000) on roads, not including expenditures for urban highways. The cost of a mile of new road runs to around 1,600,000 zloties (\$68,667) as compared to 200,000 zloties (\$8,333) for modernizing one mile of existing highway.

Poland has great variety of topography ranging from a sea-level coastal plain in the north, through a lake region and rolling countryside, to a high mountainous area in the south. Winters are severe, and frost penetration may reach a depth of 5 feet. Rainfall varies from 18 to 32 inches annually. For aggregate there



Stefan Rolla, manager, technical division, Central Office of Public Roads, Poland.

is sand and gravel of glacial origin in parts of northern Poland. In the central part there are some deposits of rather soft limestone. The best materials—granite and basalt—are found in southwestern Poland. The principal binding material is coal tar, a by-product of the Polish coal-mining industry. About 100,000 tons of tar are used on highways annually as compared with 25,000 tons of asphalt.

Polish highway engineers receive their higher education in any one of five polytechnic colleges or universities. Technicians in less responsible positions are generally trained in specialized technical high schools, of which there are seven. Polish engineers take an active part in such world-wide organizations as the Permanent International Association of Road Congresses, the International Association for Bridge and Structural Engineering, and the International Association of Soil Mechanics and Foundations.

Rebuilding bridges

Immediately after the war, the primary concern of Polish engineers was the rebuilding of demolished bridges. The total length of these

On rock jobs that rip the
hide off ordinary tires—and
tear the heart out of profits
—you'll move more tonnage
with far less delay when you
shod your trucks with stronger,
safer, NYGEN[®]-built

GENERAL TRUCK TIRES

... the tires that help get your
jobs done faster!

Specify GENERALS on your new equipment

THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

For more facts, use Request Card at page 18 and circle No. 258

(Continued from preceding page)

many bombed-out structures, large and small, totaled 297,000 linear feet. After that came the improvement of the existing surfaced roads. Primary roads are widened to pavement widths of 20 or 23 feet and secondary roads to 16 feet. Bad alignments are straightened, and vertical curves are flattened. Most of the base courses are either waterbound macadam or soil-cement, from 5 to 7 inches in depth. Surfacing is usually in two courses of tar-concrete that is mixed in traveling plants. Some Soviet-make mechanical spreaders are used to lay the surface, but the spreading generally is done by hand. The greatest deficiency in Polish road-building equipment is in such machinery as rotary

speed mixers, rubber-tire self-propelled rollers, bituminous spreaders and finishers, loaders, motor graders, and scrapers.

The state highway system is controlled by the Central Office of Public Roads, Ministry of Communication. The country is divided into 17 districts, with each district undertaking the modernization and maintenance of roads, plus minor bridges, within its district.

Major construction projects are undertaken by state contractors, of which there are four specializing in road work and two in bridge building. The Central Office selects a contractor for a job and supervises his work. The two parties work out an agreement on the total cost of a project based on current state prices for la-

bor, materials, and equipment. About one-fifth of the contractor's personnel has permanent status, while the remaining four-fifths of the crew is recruited for each job from the neighborhood area. **THE END**

A 68-TON BOX-GIRDER SECTION, that will become part of the cantilever support for the stainless-steel roof of Pittsburgh's Public Auditorium, is set in place by two cranes. Steel is being fabricated and erected by U. S. Steel's American Bridge Division. The entire girder "arm" will extend 205 feet to a pivot point where six movable and two fixed leaves of the retractable roof meet.



AT HOME...Where Things are Happening



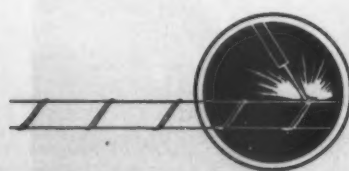
NAYLOR Spiralweld pipe and Wedgelock couplings are always ready for action in construction service. The two go together for lines that are light in weight but heavy on performance. They simplify handling and installation. They give you lightweight lines that are stronger and safer—while saving you time, work and money.

Whether you need pipe for handling water, hydraulically-placed fill, or ventilation, it will pay you to consider the advantages of this NAYLOR combination.

Write for Bulletin No. 59.

How NAYLOR Wedgelock Couplings Speed Connections

- 1 Drive wedge into two parallel lugs to open coupling.
- 2 Slip coupling over pipe and put next section in place.
- 3 Drive out opening wedge so coupling snaps into place on grooved ends of pipe.
- 4 Drive wedge home into the three lugs on coupling. A hammer is the only tool needed.



NAYLOR
PIPE *Company*

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

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Pavement design treated in new HRB bulletin

"Flexible Pavement Design: Research and Development 1958" may be purchased for \$1.20 from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Bulletin 210 contains five papers covering notes of the U. S. Army Corps of Engineers' CBR design procedures; a summary of load-transmission tests on flexible paving and base courses; how Oklahoma uses its present highways to establish criteria for evaluating future structural-design need; analysis of flexible-pavement deflection and behavior data; and flexible-pavement design in Idaho. Graphs and tables abound.

Worthington engineer wins ASME award

The 1959 Junior Award of the American Society of Mechanical Engineers has been presented to Victor Salemann, research engineer for the Harrison Division of Worthington Corp., Harrison, N. J. The award is presented annually for the best technical paper published during the year by an associate member of the society. Salemann's article is entitled "Cavitation and NPSH (Net Positive Suction Head) Requirements of Various Liquids."

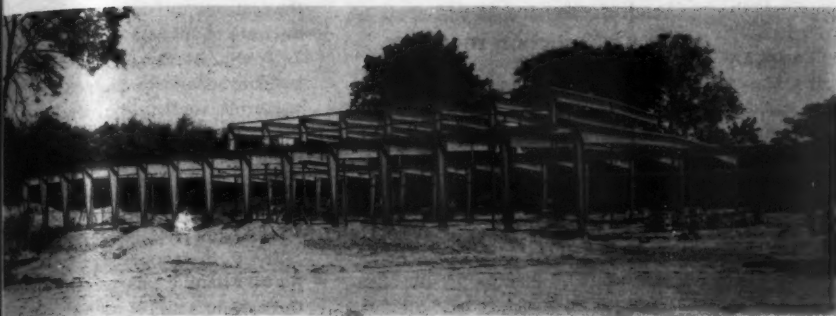
Parker Seal appoints

Harold Moorehead, Jr., has been appointed a sales representative for the Philadelphia district of the Parker Seal Co., division of Parker-Hannifin Corp., Culver City, Calif. He will handle O-rings and other seals and will work with Parker Seal Co. distributors in eastern Pennsylvania, southern New Jersey, Delaware, Maryland, Virginia, and West Virginia.

L. B. Foster appoints

George E. Willenberg has been appointed Detroit district sales representative of L. B. Foster Co., Pittsburgh. He will handle the company's complete line of steel sheet piling, track materials, pipe, and allied steel products in Michigan and Indiana.

CONTRACTORS AND ENGINEERS



TAPERED COLUMNS for the Finneytown, Ohio, high school were formed by splitting 21-inch WF beams diagonally along the web, reversing one half, and then welding the webs by the submerged-arc process, using Lincoln Electric ML-2 equipment. This gave a tapered section about 10 inches wide at the base and 32 inches wide at the top. Rafter end sections are also composite elements, made by arc-welding a tee to half of a diagonally split 21-inch beam.

Caterpillar forms defense department

A Defense Products Department has been formed by Caterpillar Tractor Co., Peoria, Ill., to participate in the development of new concepts in research, engineering, and production as either a prime contractor or a subcontractor. The department plans to work more closely with the Defense Department.

E. B. English, manager of the former Governmental Division, will head the new department. He will be assisted by T. A. Glass, manager of the contract division, and G. T. Lundberg, chief engineer in the engineering division.

Galion trailer units covered by one warranty

Galion Allsteel Body Co., Galion, Ohio, has adopted a policy that provides for a single warranty to cover body, hoists, and chassis of Galion trailer units. To the ultimate user, this policy offers the advantage of a single source for replacement parts, as well as the convenience of dealing with only one manufacturer for all trailer components.

Additional information on the warranty may be obtained from the company.

American Pulley expands

A one-story building is being erected adjacent to the present facilities of The American Pulley Co., Philadelphia. When completed in the fall, the new structure will be used for the firm's line of power-transmission and material-handling equipment, and will provide space to handle a new product line.

Laclede transfers Gay

S. Tucker Gay, Jr., has been appointed assistant district sales manager in the Chicago office of Laclede Steel Co., St. Louis. Most recently he was regional salesman for the company's industrial and automotive steel in the Detroit office.

Stephens-Adamson names

Paul A. Christopher has been appointed district manager for the Los Angeles engineering sales office of Stephens-Adamson Mfg. Co., Aurora, Ill. Prior to his new post, Christopher was manager of the Chicago branch.



Heavy jobs like this are easy for the big new Cat No. 14 Motor Grader, working here on a section of Interstate Highway System near Corsicana, Texas. Owner: T. L. James & Co. Inc. and R. W. McKinney, Corsicana.

MOST VERSATILE BIG GRADER EVER DEVELOPED

—NEW 150 HP CAT TURBOCHARGED NO. 14!

The first and only Turbocharged Motor Grader, the big No. 14 delivers high production at low operating cost both on the roughest and finest grading work. It packs 150 HP and 29,280 lb. heft to handle heavy work quickly. Operates at the highest practical working speeds with either a 12-ft. or 14-ft. moldboard. You don't have to pick "spots" to make it pay off. You can use it profitably on many different applications such as:

—**power applications** like heavy grading, ditching, rough grading, bank sloping. Its low center of gravity provides extra blading and machine stability.

—**control applications** like light spreading, surface maintenance, fine grading and light blading. With Preco Automatic Blade Control, it controls blade slope within $\frac{1}{8}$ in. in 10 ft.—cuts fine grading time in half.

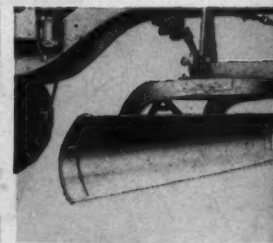
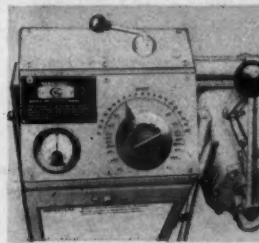
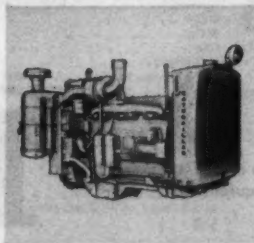
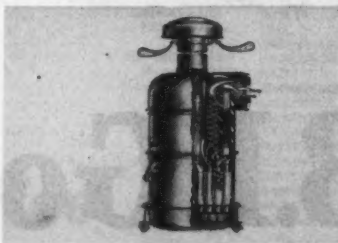
PAYOFF FEATURES OF THE NEW NO. 14 — Plus exclusive oil clutch, power steering and power brakes, tubeless tires, extra strength frame, unequalled visibility and many other features.

NEW DRY-TYPE AIR CLEANER. Removes 99.8% of all dirt from intake air during every service hour. Can be serviced in 5 minutes. Cuts maintenance time by up to 70%. Extends engine life.

NEW TURBOCHARGED CAT ENGINE. Turbo-charger utilizes waste energy from engine exhaust to increase efficiency and economy. Engine provides high torque rise that pays off on the job.

PRECO AUTOMATIC BLADE CONTROL. Optional. Operator selects desired slope on dial. Now transistorized, unit automatically controls blade slope within $\frac{1}{8}$ in. in 10 ft.

HIGH THROAT CLEARANCE. New design permits increased clearance between moldboard and circle for greater loads. Also extra-strong frame, circle and drawbar.



For more facts, use Request Card at page 18 and circle No. 260

CATERPILLAR

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**BIG NO. 14—
BORN OF RESEARCH
PROVED IN THE FIELD**

Names in the news



Alexander Matiuk, vice president and director of engineering for Burns & Roe, Inc.

Burns & Roe elects Matiuk vice president

Alexander Matiuk has been elected vice president and director of engineering for Burns & Roe, Inc., New York City consulting engineers and constructors. He will direct all engineering and design activities, including related architectural and estimat-

ing functions, and will coordinate the work of all technical departments.

Former director of the Power Engineering Division of the firm, Matiuk is a registered professional engineer in New York, New Jersey, Pennsylvania, Maryland, and Michigan.

Asphalt Institute news

James A. Burton has been named district engineer for Idaho and Montana by The Asphalt Institute. He will establish headquarters at Helena, Mont. Burton was previously chief engineer of the E. B. Steele Co., a consulting engineering firm of Boise, Idaho.

Lawrence K. Murphy has been appointed district engineer for New England. He will make his headquarters in Boston, where he succeeds Robert C. Briggs. Murphy recently retired from his post as construction engineer and training coordinator of the Maine State Highway Commission.

Laclede award presented at ASCE section meeting

At a meeting of the St. Louis Section of the American Society of Civil Engineers, the Laclede Steel Co. award was presented to Arlys T. Peterson as the outstanding senior civil engineer at Washington University, St. Louis. The award is given annually to a senior student, designated by a faculty committee for his scholastic standing, extracurricular activities, and specific interest in student and professional societies.

At St. Louis University, the winner of the Laclede award was George C. Lindh.

Twatts-Wittenberg firm now has sole owner

Carl H. Wittenberg, partner and co-founder of Twatts-Wittenberg Co., Los Angeles constructors and engineers, has acquired full ownership of

the company through purchase of the interests of his late co-partner Paul J. Twatts. At the present time, the company has more than \$40 million worth of construction work under way.

Corps chief wins award for superior performance

The U. S. Army Engineer Division, North Atlantic, has presented John G. Pack, Jr., chief of construction operations, with an award for sustained superior performance and a check for \$300. Pack is responsible for placing \$1 million per day of military and civil works construction in both the Zone of the Interior and off-shore locations.

WRI elects officers

Warren D. Dreher and Bruce D. Bennett have been elected president and vice president, respectively, of the

B.F. Goodrich ON-THE-JOB TIRE SERVICE

as fast as expert as can get

We give you the kind of service you want and need. B.F. Goodrich Contractor Service is completely equipped with power tools—hydraulic automatic wrenches, bead breakers. B.F. Goodrich Tire Service is trained to handle any problem, no matter how big the tire, how the equipment, how complex the repair.

Result: costly downtime at a minimum, the project stays on schedule and you save on tire replacement costs!

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Wire Reinforcement Institute. Dreher is wire-products sales manager for the Western Division of The Colorado Fuel & Iron Corp., New York City. Bennett is manager of construction-material sales for the American Steel & Wire Division, U. S. Steel Corp., Cleveland.

Maryland Roads appoints head of new division

Maryland State Roads Commission has appointed Robert J. Hajzyk head of the new Planning, Programming and Research Division. The division coordinates many phases of the highway program, confers with local governmental and civic organizations on commission matters, and has the responsibility of expanding research activities.

Hajzyk was previously chief of the Bureau of Operations of the Baltimore County Department of Public Works.

ACI names director

Kenneth D. Cummins has been appointed as technical director of the American Concrete Institute. His new duties will include field and office work to promote and improve technical relations with other special societies and organizations; assisting member groups in organizing and conducting small local meetings; and, upon request, assisting ACI technical committees in the preparation of reports.

Perini elects director, executive vice president

Perini Corp., Framingham, Mass., has elected Robert H. Ryan executive vice president for industrial planning and development, and a director of the corporation. He has been serving as director of area development of the Committee for Economic Development in New York City.

Pennsylvania pike news

Clarence E. Nachand has been appointed by the Pennsylvania Turnpike Commission to oversee maintenance of the eight tunnels on the toll road. The commission also named Joseph J. Loftus budget director. He was previously chief of the internal audit department.

Hunkin-Conkey elects

Robert J. Boyer has been elected a vice president of The Hunkin-Conkey Construction Co., Cleveland. He was formerly a supervising accountant on the audit staff of Ernst & Ernst, accounting and management consulting firm.

Benham Engineering news

Michel K. Antarakis and Billy E. Tindell have joined the staff of Benham Engineering Co., consulting en-

gineers of Oklahoma City and Muskogee, Okla. Tindell was previously an architectural designer for Cities Service Oil Co. in Bartlesville, Okla.

Coakley & Booth elects

The New York City firm of foundation specialists, Coakley & Booth, Inc., has elected Robert J. Armstrong, P. E., a vice president. He joined the firm in 1956 as chief engineer. Prior to that, he had been associated with the Drilled-In Caisson Corp.; Spencer, White & Prentiss, Inc.; and Frederick Snare Corp.

Connecticut highway news

William C. Murray has retired as head of the Public Relations Division of the Connecticut State Highway Department. He has headed the division for the past 20 years, working under various titles in the state merit system.

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ADAMS	5-2571
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LIBERTY	6-3271
JEFFERSON	6-2467
HEMLOCK	2-2881
AMHERST	2-1861
PLAZA	8-6312
ARIZONA	
ALPINE	3-6168
MAIN	3-3881
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FRANKLIN	4-5068
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FAIRVIEW	4-4701
GARDNER TIRE SALES	
HILLSIDE	2-7700
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REPUBLIC	7-5825
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CLINTON	3-6505
JACKSON	4-6882
ELGIN	4-2801
MUTUAL	2-0331
NEWTON	3-8635
MARION	2-4254
GARDEN	2-3161
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5689	
FLATWOOD	2-5121
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PERU	GRIDLEY 2-2191
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CEDAR RAPIDS	EMPIRE 4-5185
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HUTCHINSON	MOHAWK 2-0281
KANSAS CITY	MAYFAIR 1-2255
KANSAS CITY—Missouri Valley Tire Co.	MAYFAIR 1-4515
LEAVENWORTH	MUTUAL 2-2091
SALINA	TAYLOR 3-2271
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KENTUCKY	
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BOSTON—Merchants Distributors, Inc.	CO 7-9200
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NORTH CAMBRIDGE	UN 4-4894
SPRINGFIELD	RE 3-4666
MICHIGAN	
DEARBORN	LIZON 1-4900
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DULUTH	RANDOLPH 2-6747
MINNEAPOLIS	FEDERAL 5-1195
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ST. PAUL	MIDWAY 3-3981
MISSISSIPPI	
BILOXI	IDLEWOOD 6-6151
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GREENWOOD	70
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TOLEDO	CHERRY 3-1258
WOOSTER—Streck Tire Company	HOWARD 2-6886
OKLAHOMA	
ENID	ADAMS 4-5121
OKLAHOMA CITY	FOREST 6-1347
OKLAHOMA CITY—Johnnie's Tire Co.	Ltd.
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TULSA—Tom P. McDermott	LINCOLN 5-1221
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EUGENE	DIAMOND 5-6141
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PORTLAND—Mel Goodin Recap Plant	ATLANTIC 8-5541
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ERIE	3-3205
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JOHNSTOWN—McNally Tire & Rubber	7-5343
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HARLINGEN	GARFIELD 3-4330
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PASADENA	GREENWOOD 3-3531
PORT ARTHUR	YUKON 4-6567
SAN ANTONIO	CAPITOL 7-7278
TYLER	LYRIC 4-6208
VICTORIA	HILLCREST 3-0341
WESLACO	WOODLAWN 5-2822
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BURLINGTON	UNIVERSITY 2-3801
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FRONT ROYAL—Bard Tire & Battery Co.	277
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NORFOLK	MADISON 3-2827
PORTSMOUTH	EXPORT 7-2277
RICHMOND	ELGIN 5-3296
ROANOKE	4-3241
ST. PAUL—Tri-County Tire Service	RO 2-5301
WINCHESTER	MOHAWK 2-0381
WASHINGTON	
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SPOKANE	MAIN 4-3271
TACOMA	MAIN 7-9173
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CHARLESTON	DICKENS 8-0431
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For more facts, use Request Card at page 18 and circle No. 261



New data on highway program will bring hike in costs

What to do about the deficit in the Highway Trust Fund has, up to mid-July, not been solved by the current legislative session. It is still a safe bet that the program will not be allowed to falter, that Congress will find some way to keep the money rolling, and that contractors can continue to figure on road jobs. One evidence is the Bureau of Public Roads' readiness to

hold back new apportionments (originally due July 1) until Congress takes some action.

Meanwhile, borrowing is the best prospect for replacing the trust fund money. The measure that seems most likely to succeed is a joint resolution (SJ 109), sponsored by Sen. Francis Case (R., S. Dak.), which would permit the Treasury to issue limited interim bonds, secured by future revenues of the fund. This would preserve,

in form at least, the pay-as-you-go features of the original highway act, and might be palatable to the Administration.

But there are other matters on the highway program that are of interest to engineers and contractors and that will certainly affect costs.

One of these is a new attack by highway user groups on what they term excessive costs of bridges over navigable waterways, because of ex-

cessive clearance heights and channel width clearances required. Highway users claim that navigational requirements of this kind add some 27 percent to the cost of highway bridges, and they call this a hidden subsidy out of highway funds to water-borne transportation. Reinforcing this position is a bill (S. 1126) which provides that in ascertaining the public interest, the U. S. Army Corps of Engineers must "recognize the equal rights of all forms of surface transportation; and evaluate the economic effect of the added cost of constructing the bridges for required navigational clearances. . . ."

A second is the short shrift a Senate Public Works Subcommittee gave a two-sentence bill (S. 2206), proposed by Wyoming's two senators which would, in effect, give a state governor veto power over BPR in the selection of interstate routes. In testimony, it developed that Wyoming Governor J. J. Kelly was annoyed at his highway commission (appointed by his Republican predecessor) who refused to put an interstate route between Laramie and Walcott Junction through three small communities. The Senate group gave no evidence that it would give much consideration to the bill beyond what is required by courtesy to fellow-members of the Senate.

New bills, if passed, will bring money to contractors

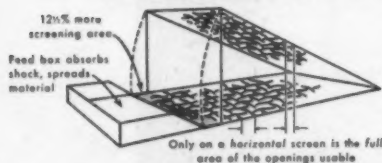
An aspect of highway work stands about a 50-50 chance of enactment is a new measure, S. 2240, which would set up \$2.2 billion over the next 12 years for work in the national forests. The lion's share of the bill would go for forest road construction; there would be \$720 million in federal government appropriations over the 12-year period, plus \$524 million worth of roads to be built by private operators who would pay for them by virtue of reductions in timber taxes. The program is expected to produce 90,000 miles of new roads and trails.

Federal construction appropriations so far this session add up to more than \$3.5 billion. This includes \$1.1 billion for military construction; all services; \$299 million for the Department of Health, Education and Welfare; \$165.4 million construction money for the Atomic Energy Commission; \$53 million for the National Aeronautics and Space Agency; \$133.1 million for agricultural conservation service, etc.; \$1 billion for General Services Administration. And it goes down to \$4.4 million for the Justice Department to rehabilitate and repair prisons; and



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million for the State Department for completion of the Rama road in Nicaragua.

That total of construction money does not include authorizations for spending in the future, for which no direct appropriation is made. Such a matter is the so-called Blatnik Bill, which would double present federal outlays to clean up streams, bringing them up to an authorized \$100 million a year for 10 years.

In fact, that is an aspect of federal financing that will confuse anybody. For instance, legislators have been proudly proclaiming that they have cut presidential requests for money by a total of \$298 million, up to mid-July. But a study by the non-partisan Tax Foundation indicates that at the same time, Congress at this session has authorized spending that exceeds Eisenhower's money requests by \$906 million over the next several fiscal years.

A total of \$350 million in construction loans and grants, over a 10-year period, for expansion and modernization of medical schools, would be set up under a Senate bill S. 2170. It would set up a fund of \$50 million yearly for five years for matching grants to medical schools, already in operation, for expansion, improvement, and modernization; and authorizes \$100 million, over 10 years, for grants for construction and maintenance of new medical schools.

No Supreme Court ruling on limited-access laws

The Supreme Court did not rule on the constitutionality of state limited-access laws. The case in question involved an owner's property adjoining Pittsburgh's new airport parkway, and he challenged the state's right to put off his access to the new highway. A district court granted him an injunction forbidding the state highway commission to deny him the access.

The Supreme Court denied the injunction and thus, in a way, affirmed the state law. But actually, the court simply said that the property owner had ample remedy for damages in state courts and should not bother the federal court on the matter.

House bill may have adverse effect for construction

The debate in the House at the end of June over two-sentence HR 3 resulted in passage of the bill, and could result in really vast confusion for the construction industry, among others.

In effect, the bill would permit state laws to operate—whether or not there are also federal laws in the same area—unless the federal law states specifically that Congress intended to preempt the legal field. The result could be tremendous confusion, for example, in the field of labor relations, where the courts have been throwing out state laws that conflict with federal requirements or cover similar ground.

The bill's chances in the Senate are unpredictable. Basic support for the

bill came from Southern representatives, but there was a lot of support also from Western delegations, which have long been arguing that the federal government is interfering with states' rights, particularly in water and conservation matters.

Both sides win on money for federal airport aid

It is hard to figure who won on the final compromise that saw a total of \$126 million authorized for federal airport aid to cover a two-year period.

In one respect, the President won—he forced Congress to accept his demands for economy and for holding expenditures within his budget. In another, the Democratic majority won a victory in that it put across its view that an appropriation to cover only the last years of Eisenhower's term would be better than nothing, and would give them a chance to revise estimates upward with the election of a new President.

However, the losers could well be airport contractors and officials. They

have now assurance that present programs will continue on the current level for two years, but no assurance of what will happen after that time.

And the Federal Aviation Agency lent point to the demand for continuing programs. Said the FAA: a survey of its 213 control towers showed a total of 26.6 million aircraft landings and takeoffs at major airports in 1958, a 6 per cent jump over the previous year for an all-time high in activity.

What's proper Victor alloy for your

HARDFACING NEEDS?

This chart gives you quick answer. Use it to select right rods for prolonging operating life of your equipment.

You'll be selecting rods that go on quickly and smoothly, thereby saving labor and downtime. Order from your Victor dealer today.

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for hardfacing

H-60

RODS FOR MANUAL APPLICATION

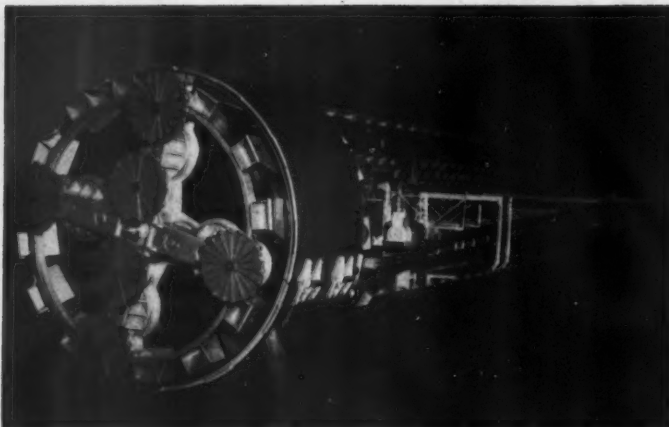
This Hardfacing Rod	For These Conditions	This Equipment or use	How Applied
VICTORTUBE (Tungsten Carbide)	Severest abrasion	Earth cutting, scraping, drilling tools, rippers, augers, ditchers, excavators, loaders	Gas AC-DC Arc
VICTORTUBE (TC) Bare 30-Down	Severest abrasion; moderate impact	Agricultural and earthworking tools. Suitable for acetylene application	Gas only
VICTORTUBE "SPECIAL" (Tungsten Carbide)	Severe abrasion with impact	Oil field tools - rock bits, drag bits, reamers; water well drilling tools	Gas only
VICTOR TUNGSMOOTH (Tungsten Carbide)	Maximum abrasion	Edged cutting tools - bits, blades, farm tools. Smooth, thin deposits on augers, screw flights, paddles.	Gas AC-DC Arc
VICTORITE	High abrasion; sliding friction	Earthmoving and agricultural tools, brick augers, conveyors, mill guides	Gas AC-DC Arc
TUBE VICTORITE	Abrasion and impact	Farm tools, crushers, grinders, mixers, scrapers, fan and screw conveyors	Gas AC-DC Arc
VICTORITE 1	Heat; abrasion, corrosion	Chemical & food machinery, cement pumps, brick dies, dry bearings & journals, expellers	Gas AC-DC Arc
VICTORITE 8	Heat; impact; corrosion; abrasion	Hot dies, stripper bits, exhaust valves & seats, dry bearings & journals, edging rolls, cams	Gas AC-DC Arc
VICTORITE 12	Heat; corrosion; abrasion; impact	Saw-blade inserts, shaft bearings, hot punches, flapper valves, needle valves	Gas AC-DC Arc
VICTORITE CARBON ARC	High abrasion; sliding friction	Farm tools, earth abrasion. Applied by gas. Deposits are exceptionally smooth.	Carbon Arc Gas
VICTORITE Plow Point Bar	High abrasion; sliding friction	Cast-to-shape, weld-on cutting edge for plow shares, digger teeth, pilot bits	Gas
VICTORALLOY	Severe impact; abrasion	Crusher & dredge parts, tamper feet, bucket teeth. A tough low-cost hardfacing.	Gas AC-DC Arc
VICTORALLOY #1	High abrasion; medium impact	Crushers, bucket lips & teeth, muller tires, dozer blades, dredge pumps	Gas AC-DC Arc
VICTORALLOY "A"	Angular shock; extreme impact	Clutch parts, gears, latches, pins & keepers; build-up for hardfacing	AC-DC Arc only
VICTORALLOY "B"	Heavy impact; moderate abrasion	Tractor idlers, sprockets, rolls, crusher parts, pump casings, impellers, liners	AC-DC Arc only
VICTORALLOY "C"	High abrasion; moderate impact	Cement screws, gudgeons, drag chains, pressure rolls, mixer blades & paddles	AC-DC Arc only
VICTOR MULTI-PASS (for Build-Up)	Severe impact; compression	Drill tools, crawler pads, crushers, mine rails; build-up for hardfacing	AC-DC Arc only
VICTOR Ni-Mn (for Build-Up)	Severe impact; compression	Hardmetal underbase for manganese steel parts on crushers, dredges, dip-pers	AC-DC Arc only
VICTOR Ni-Mn (for Attachment)	Severe impact	A low-cost "stainless" joining rod for crushers, dippers, crawlers, dredges	AC-DC Arc only

WIRES FOR AUTOMATIC & SEMI-AUTOMATIC APPLICATION

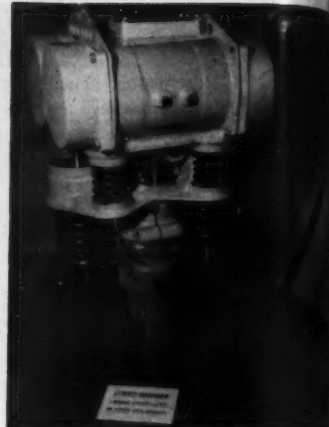
This Wire	For These Conditions	This equipment or use
VA 0	Severe abrasion; moderate impact	Crushers of all types, tool joints, mullers
VA 1X	Abrasion & compression with impact	Scrapers, bucket teeth, crushers
VA 2X	Severe compression & impact with abrasion	Steel mill rolls, dredge rolls, cable sheaves
VA 3	Severe abrasion & compression with impact	Mill guides, crushers, grinders
VA 4X	Severe impact & compression	Build-up on trunnions, tractor idlers & tracks
VA 5X	Severe metal-to-metal impact & abrasion	Shovel rollers, tractor rollers & idlers
VA 6X	Severe impact, high temp., dry bearing	Steel mill rolls, clutches, roll necks
VA 7X	Severe impact & compression with abrasion	Build-up on mine car wheels & tractor rollers
VA 8X	Earthworking abrasion & impact	Dozer blades, scraper blades, tool joints
VA 19	Extremely severe abrasion; moderate impact	Tool joints, crushers, scrapers, swing hammers
VT 60 (Tungsten Carbide)	Maximum abrasion; earth cutting, scraping	Tool joints, scraper blades, augers
Ni-Mn (Hadfield)	Wear, all types manganese steels	Build-up manganese steel parts for overlay or to size



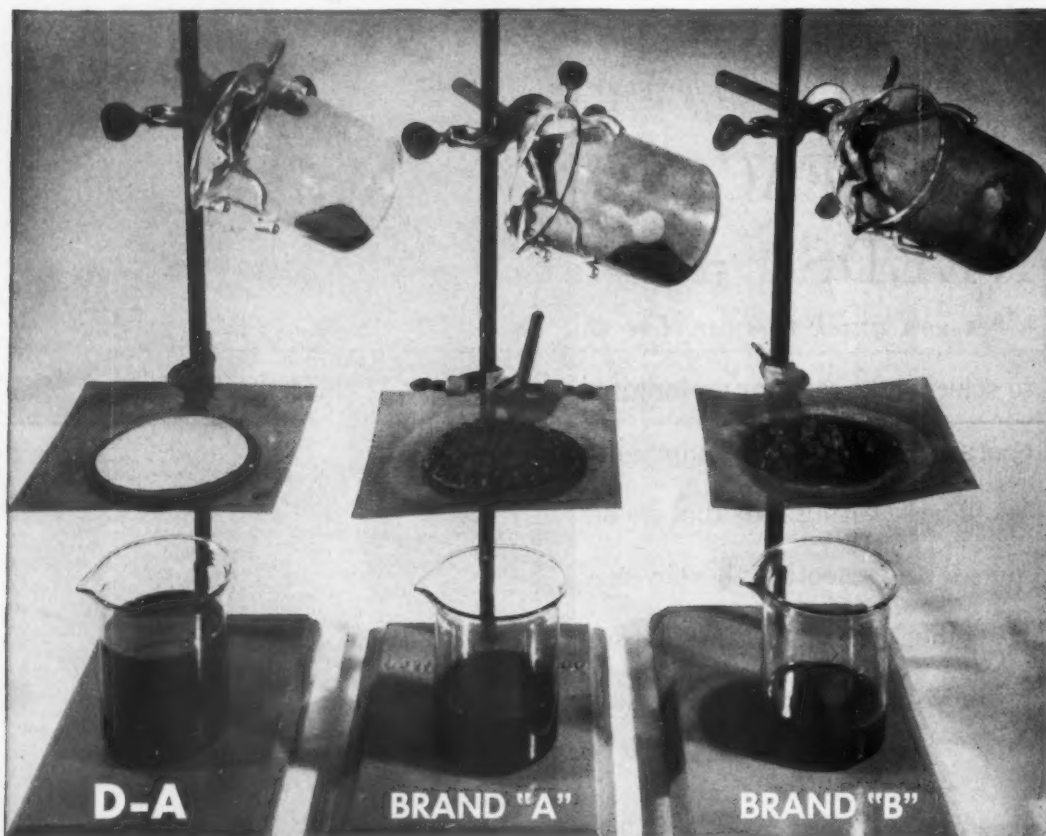
The Russian version of the tower crane is prominently displayed in the construction section of the Soviet Exhibition.



A model of a tunneling machine in the USSR has a shield that rotates in one direction while six cutting edges rotate in the other. A conveyor system brings muck to waiting cars; tunnel sections are brought to the heading by flat cars.



On display in New York's Coliseum is the Vibro-Hammer, which vibrates piles in place at a speed of from 0.2 to 7 fpm.



Stop sludge, stop corrosion with D-A UNIVERSAL GEAR LUBE

The unretouched photograph above shows the results of a 24-hour accelerated oxidation or sludge test. On the right, two leading brands of gear lube are badly oxidized following the test while, on the left, D-A Universal Gear Lube remains clear, stable and capable of extended use.

Here's what this means to your operation: film strength is the element of a gear oil which prevents wear. To obtain high film strength, extreme pressure additives are placed in the lubricant. At a temperature of about 250° — often encountered in heavy-duty equipment operation — these additives can oxidize, as they

have in the competitive oils seen above. When this oxidation occurs, the oils become extremely corrosive and rapid wear results. Tests prove that D-A Universal Gear Lube does not corrode, even at temperatures as high as 300° F.

D-A Universal Gear Lube does not sludge or oxidize under high operating temperatures because D-A research has established successful means of retaining the stability of D-A's high-quality base oil while maintaining the high film strength necessary for extra-heavy-duty equipment operation. For greater protection of *your* equipment under heavy

load and high temperature conditions, specify D-A UNIVERSAL GEAR LUBE.



Lubricating heavy-duty equipment across the nation since 1919.

D-A LUBRICANT COMPANY, INC. • INDIANAPOLIS 23, IND.

For more facts, use Request Card at page 18 and circle No. 264

Soviet exhibition shows progress in construction

An impressive display of Russian achievements in technology, science and medicine went on view last month with the opening of the Soviet Exhibition in New York City's Coliseum.

While Sputniks and space exploration stole the show as far as most visitors were concerned, any construction man at the exhibition found Soviet displays of building techniques and equipment worth more than a second look.

Except for the shiny new Vibro-Hammer, all displays were confined to models. Among them were a model of a tunneling machine for subway work, a slewing crane, and a factory for assembly-line production of precast concrete building materials.

The Vibro-Hammer, which reportedly sinks piles at a rate of 0.2 to 7 fpm, has come in for plenty of attention from U. S. engineers. Soviet construction men have been using the technique for a decade, and an explanation of the equipment and the work it does was the highlight of a joint USA-USSR Soil and Foundation Engineering Seminar at Princeton University in May. (See "Drive Piles—The Soviets Shake 'N' Down," C&E, July, 1959, page 22.)

The Soviet model of the slewing crane, on display against a backdrop with photos showing the crane in use on several building jobs, has features similar to the German-made crane that have been gaining acceptance in this country.

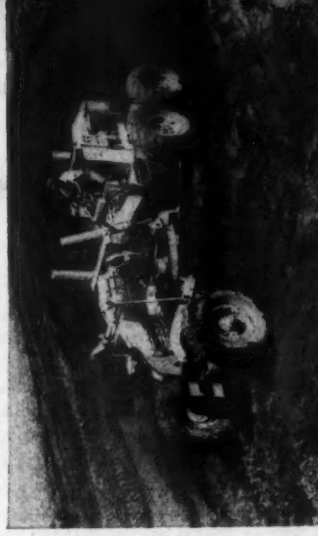
A big working model of a tunneling machine with six cutting disks that rotate in one direction while the 10-foot shield rotates in the opposite direction virtually makes tunneling a production-line job. A top production rate of more than 36 feet per day is claimed for the machine. The loosened muck is carried into ports by a conveyor-belt system to a waiting line of muck cars on rails. Tunnel segments are brought to the heading by flat cars riding another set of rails.

A model of the Stalingrad plant shows the mass-production setup for reinforced-concrete building sections. Such production is feasible in the USSR, since there is a standardization of design for apartments, schools and government buildings.

CONTRACTORS AND ENGINEERS

"We own four Huber-Warco graders and know from experience that they are tough machines. We can depend on them for all types of grading work."

**Lloyd Bruns, Vice President
Brun's Coal Company**



Whatever the grading assignment, Huber-Warco motor graders work harder and faster.



TANDEM ROLLERS



MOTOR GRADERS



WHEEL ROLLERS



MOTOR GRADERS



WHEEL ROLLERS

Brun's uses H-W Graders on Ohio job

When Brun's Coal Company, a highway contractor of Zanesville, Ohio, got the contract for a six-mile section of the new Ohio Freeway, they put two of their Huber-Warco graders on the job.

The Brun's contract is for a portion of the new road that will link Cincinnati and Cincinnati, Ohio. This highway has been designated as Ohio State Route 1, and will be a vital link in the nation's system of federal roads.

A total of two million yards of dirt will have to be moved on this project before the completion date of August, 1959. A Huber-Warco 5D-190 and a 4D-115 are constantly busy keeping the haul roads clear, and trucks on time.

One big cut in this section is 40 feet deep and 2,000 feet long. The largest fill is 70 feet

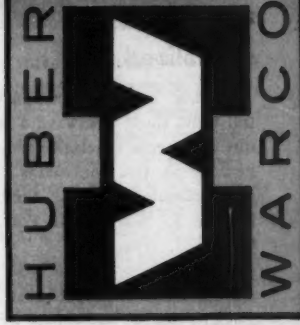
deep and extends 1,000 feet on each side of a bridge over Conneaut Creek. Brun's will also handle two and one-quarter miles of ramps and interchanges.

A six-inch gravel base will be applied to help the drainage of water from under the road. The concrete pavement will be poured to a ten-inch depth. The dual lanes of this highway will be 24 feet wide, separated by a 54 foot median. Each lane will have five foot stabilized shoulders.

Brun's makes sure that their equipment is always in top shape to deliver the most work. To minimize downtime on the job, all equipment is serviced between the two 10-hour shifts. On this job they are working a six-day week.

Huber-Warco Company

For more facts, use Request Card at page 18 and circle No. 265



Payloads keep on the move with this Huber-Warco grader clearing the way.





Get compaction in those tight spots with specialized rigs

Getting adequate compaction in the tight spots is always a problem. But two special machines proved very helpful to the contractor building Atlas missile-launching facilities at Francis E. Warren Air Force Base, Cheyenne, Wyo.

One of these is the little Essick vibratory roller, propelled by its own gasoline engine but guided by a man on foot. This roller operates right in the trenches, compacting the lifts of backfill as they are placed. It was especially effective in the backfilling of the many utility trenches between the several structures of the missile-launching complex during winter weather. Frost-free material was dumped into the trench by a Drott 4-in-1 shovel as the Essick roller worked back and forth over the successive lifts.

Where backfill was being placed around building foundations, a gasoline-powered Wacker Vibro-Rammer got right into the tight corners. This backfill was pushed into place by dozers, and the open areas were compacted with the sheepsfoot and vibratory rollers. The tight spots these big machines could not reach were thoroughly compacted, lift by lift, by the Vibro-Rammers.

The missile-launching facilities at Annex A of Warren AFB were built by George A. Fuller Co., Los Angeles, under the supervision of the Omaha District of the Corps of Engineers. Bramley Earth Moving Co., Denver, was the subcontractor on the earthwork.



Tricks of the trade

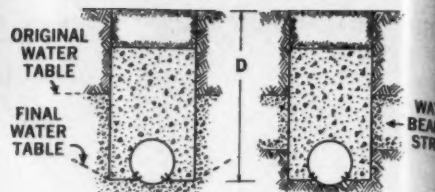
Subdrain installation can be simple job

While the flow line of a subdrain should be below the water-bearing stratum for effective drainage, it may be placed in the stratum. It will not provide complete drainage, but it will lower the natural water table if this is all that is required.

The underdrain pipe should be laid on a stable base to prevent settlement. If the line is laid below the water-bearing stratum on an impervious layer, it will generally be stable. Otherwise, it may be neces-

sary to stabilize the bottom of the trench by placing a minimum of granular material under the pipe for bearing.

Assembly of a subdrainage system is usually started at the downstream end to allow ground water to drain out of the trench during construction. If a perforated pipe is used, such as Armco Hel-Cor, the perforations should be located at the lower quarter points. This lowers the water table



to the bottom of the pipe, instead of the top.

Connecting bands are made in pieces and corrugated to fit Hel-Cor pipe. Joints are made by placing the band under the two sections of pipe so that corrugations match. The top half of the band is then placed and the bolts tightened. Each section of pipe should be rotated so the perforations are in the bottom quarters.

KOEHRING WORK CAPACITY in action...



Installing 6-foot storm sewer — Over 2 miles of 72-inch concrete sewer pipe are being placed in trench 30 feet deep. Koehring 36-ton 605 crane sets an 8-foot length of pipe in place, while a companion 605 dragline works ahead, scooping trench out of loose, shifting sand. The 2-rig Koehring team advances an average of 128 feet daily.



Pre-boring for pilings — at bridge approach on new expressway, 10-in. holes are bored at an angle 16 ft. deep through hard, compacted fill. This pre-boring method speeds pile driving. Both the crane and drill are Koehring products. Truck crane is a Koehring 15-ton 205 (with Ka-Mo drill, built by an associate division of Koehring).



Pipeline crosses stream — and a 1-yard Koehring 405 hoe wades into the gravel-bottom stream to dig submerged ditch under "dragline" conditions. Saves a production delay in remote, mountainous area, helps keep cross-country pipeline job moving on schedule. How deep can the 405 dig? 26 ft. with standard 23-foot hoe boom!



Full-revolving SKOOPER — combines big loader capacity with shovel efficiency — digs, swings, dumps, then swings back to digging position, without traveling. Twin hydraulic rams crowd 2-yd. bucket along a 7-ft. level cut from "still" position — or dig any angle of bank slope. 3 types of buckets. Excavator-crane convertible.

KOEHRING DIVISION OF KOENIG CO., Milwaukee 16, Wis.
Koehring excavators, cranes also manufactured in ENGLAND • SPAIN • JAPAN

In Canada:
KOEHRING-WATERLOO
Brantford, Ontario

little sawdust helps sticky loads slide out of truck

Sawdust was used to increase the payload on a cofferdam excavation in Houma, La.

At the beginning of the job, the contractor was having trouble with the wet, sticky clay clinging to the dump bodies. This naturally reduced the capacity of the big Mack dumps. Rather than let the job continue with trucks carrying less than a full payload—and adding to the cost of the work, the contractor stepped in with a simple solution.

A few shovelfuls of sawdust in the

bed of each truck solved the problem. Now, after the truck dumps its load, the driver wheels up to a pile of sawdust and tosses in a few shovelfuls. The sawdust prevents the clay from sticking to the steel bottom.

The excavation is being done by

Pomco, Inc., of New Orleans. The company is one of the excavation subcontractors on the open-cut vehicular tunnel being built under the Intra-coastal Canal in Houma, La. The general contractor is Baltimore Contractors, Inc., Baltimore, Md.



Soil-processing plant with TV gives operator view under big bins

A closed-circuit television system provides an extra pair of eyes for the operator of a soil-processing plant at Trinity Dam in northern California. From his position atop the plant, the operator has an excellent view of the soil and water en-



tering the three 500-cubic-yard steel tanks in which the material is processed and stored. But he cannot see the haul rigs being loaded from the batch hoppers below the bins.

The contractor installed a television camera on a nearby conveyor tower and focused it on the loading area. The camera was connected by wire to a receiver in the operator's station. The receiver is just to the right of the conveyor controls. A glance at the television screen tells the operator instantly just what conditions are in the loading area directly beneath him. This enables him to maintain a steady flow of materials to the tanks supplying the haul rigs.

Studs on grid deck reduce skidding hazard

A method of keeping cars from skidding on open-deck steel bridges has come through a 5-year test with excellent results. Here's the way the deck was modified.

Thousands of short steel studs were welded to the bridge grille by the Nelson stud-welding process. The studs were installed at a rate of 260 per man per hour by three operators with Nelson semiautomatic stud-welding guns. There was no distortion of the steel to which the studs were welded. And, because of the portability and speed of the equipment, traffic was maintained over the bridge during the job.

Since studs were installed on the steel-grid deck of the Vine Street bridge in Cincinnati, Ohio, the automobile accident rate on the structure has been reduced 64 per cent; the annual average of accidents over the 5-year period comes to 1.2 per cent per year.



Quick facts on KOEHRING WORK CAPACITY:

MODEL	TYPE OF MOUNTING	CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.)	
203	3-axle truck, or 21.5 mph Cruiser	30,000 lbs.	at 12-ft. radius
303	3-axle truck, or 18 mph Cruiser	50,000 lbs.	at 12-ft. radius
330	3-axle truck	60,000 lbs.	at 15-ft. radius
433	4-axle truck	70,000 lbs.	at 15-ft. radius
545	4-axle truck	90,000 lbs.	at 15-ft. radius
CRAWLERS		CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.)	
203	1/2 Cu. Yd.	20,000 lbs.	at 10-ft. radius
303	3/4 Cu. Yd.	30,000 lbs.	at 12-ft. radius
403	1 Cu. Yd.	40,000 lbs.	at 12-ft. radius
545	(Crane only — 85% rating)	90,000 lbs.	at 12-ft. radius
603	1 1/2 Cu. Yds.	72,300 lbs.	at 12-ft. radius
803	2 Cu. Yds.	104,200 lbs.	at 12-ft. radius
1203	3 Cu. Yds.	190,000 lbs.	at 12-ft. radius

Bridge-building "SPRAWLER" outlifts its own weight by 14%

Hoisting highway bridge girders is easy work for this Koehring® 545 "SPRAWLER"™ crane. With pivoting outriggers sprawled into position, it lifts up to 90,000 lbs.! (Weighs approx. 79,000 lbs.) Raise the pedestals for ground clearance, or remove pedestals and swing outriggers against crawlers — and the 545 "walks" with 61,500-lb. load! It has 40 to 120-foot pin-pad connected boom — handles maximum 150-foot boom-and-jib. For job-to-job transport, "SPRAWLER" strips to approx. 47,500 lbs. — with crawlers intact.



Extra lift capacity means MORE WORK CAPACITY with all attachments

For more facts, use Request Card at page 18 and circle No. 266

M anufacturer memos

E. S. Twining, Jr., vice president of marketing for Air Reduction Sales Co.



E. S. Twining, Jr., former manager of gas department-marketing of Air Reduction Sales Co. has been appointed vice president of marketing for the company, which is a division of Air Reduction Co., Inc., New York City. G. L. Werly, Jr., former assistant manager of gas department-marketing, takes over Twining's previous post.



George Golay, regional manager of Union Wire Rope.

A new regional manager for Union Wire Rope Corp., Kansas City, Mo., is George Golay. Former district manager at Jacksonville, Fla., Golay will continue to have headquarters there and will be responsible for sales and service in Florida, South Carolina, Georgia, Alabama, eastern Tennessee, and part of Mississippi.

William D. Bell has been named branch manager and will have charge of the Jacksonville warehouse and sales and service in Florida.

Champion Mfg. Co., St. Louis, has appointed William M. Cooper vice president in charge of research and product development. He was formerly vice president and chief project engineer for George E. Wells, Inc., consulting engineers. In that capacity, Cooper worked on Champion product development for nine years.

Major appointments have been made in the steel production department of U. S. Steel Corp., Pittsburgh. E. B. Speer has been named vice president of operations, succeeding Oscar Pearson, who was recently appointed administrative vice president of the steel producing divisions. R. W. Graham replaces Speer as general manager of operations. Graham was formerly general superintendent of the company's Homestead District Works in Munhall, Pa.

Marcus M. Chapman has been appointed an administrative vice president of commercial; and Howard J. Mullin succeeds Chapman as vice president of sales.

William F. Humphrey has been promoted to director of sales for Hercules Motor Corp., Canton, Ohio. He was previously midwest district sales manager in Milwaukee.

Ramset Fastening System, Cleveland, has named R. H. Benedict, Jr., sales manager. He joined the company in 1955 to take charge of its training school, and most recently was assistant field sales manager. Ramset, which is a part of Olin Mathieson Chemical Corp., produces powder-actuated fastening tools.

Two senior appointments have been made by Worthington Corp., Harrison, N. J., George F. Habach advances to the newly created post of vice president of administration. He will have full responsibility for the corporation's staff activities of comp-

troller, employee and public relations, engineering, manufacturing, marketing, purchasing, and taxes.

Rear Adm. Albert G. Mumma (U. S. N., ret.) succeeds Habach as vice president of engineering. Adm. Mumma was formerly chief of the Bureau of Ships, U. S. Navy.

Two personnel changes have been made in the Springfield, Mo., tank-trailer manufacturing plant of Trailmobile, Inc., Cincinnati. Robert Volk has been appointed plant manager and Gene F. Robinson, chief engineer. Both will report to the manager of operations at Springfield.



James H. Coover, executive vice president of D-A Lubricant Co., Inc.

D-A Lubricant Co., Inc., Indianapolis, has appointed James H. Coover to the newly created office of executive vice president. He was formerly vice president of production and research for the company, which manufactures lubricants for heavy-duty construction machinery.

DIAL A GEAR

Calvin Friar, assistant district manager for The Union Metal Mfg. Co., Canton, Ohio.



The new assistant district manager in the northern California and northern Nevada district for The Union Metal Mfg. Co., Canton, Ohio, is Calvin Friar. From San Francisco headquarters, Friar will work on the sale of Monotube lighting poles, founda-

tion piles, material-handling equipment, and other products of the company.

Harnischfeger Corp., Milwaukee, has appointed William L. Carter treasurer and James H. Mezera controller. Carter continues to be secretary and treasurer of both Harnischfeger Export Corp. and Harnischfeger Credit Corp.

Robert Losse, director of industrial relations and personnel, now heads these activities in all P&H branch plants and sales offices.

Jack Boettcher has been named assistant director of industrial rela-

tions; and Wayne Busse is the new assistant personnel director.

W. W. Johnson and T. D. Mescall have been promoted to new positions in the Motor Truck Division of International Harvester Co., Chicago. Johnson, former assistant district manager at Kansas City, becomes general supervisor of used-truck merchandising. Mescall, who was previously assistant district manager at New York City, is now assistant manager of fleet sales.

Loren D. Gilmore has been appointed systems and data services manager of the company's Construc-

tion Equipment Division. In his newly created post, Gilmore will plan and manage the flow of information not within the scope of the controller's function.



Bert E. Phillips, acting general manager of the Industrial Truck Division, Clark Equipment Co.

The new acting general manager of the Industrial Truck Division, Clark Equipment Co., Battle Creek, Mich., is Bert E. Phillips, who fills the vacancy created by the resignation of Robert H. Davies. John E. Mitchell has been named general sales manager of the division, the position formerly held by Phillips.

The board of directors of the Allis-Chalmers Mfg. Co., Milwaukee, was re-elected at the annual meeting. They, in turn, re-elected the following officers: R. S. Stevenson, president; W. G. Scholl, executive vice president; Boyd S. Oberlink, group vice president; J. L. Singleton, group vice president; and W. A. Yost, Jr., vice president of staff operations.

Howard R. Hammond has been named general manager of the newly created Defense Products Division. The division was formed to serve the country in defense and nondefense areas and to increase the company's participation in government programs.

Roger S. Hubbell has been appointed assistant to A-C's vice president of staff operations. He will handle special assignments, including salary services.

Stuart A. Currie has been named contractor service manager of the explosives and mining chemicals department of American Cyanamid Co., New York City. Formerly district manager of the Pennsylvania and Maryland area, Currie will now be responsible for coordination of marketing to the construction industry. He will headquarter in Latrobe, Pa.

Edward J. Rogers has been elected a member of the board of directors of Koehring Co., Milwaukee. Rogers is president and chairman of the board of directors of the Layne-Northwest Co., Wauwatosa, Wis., industrial and municipal well-drilling contractors.

John C. Tead has been appointed manager of market research. He will provide interpretations and analyses in the industries which Koehring serves.

Martin B. Jaeger has been appointed to the newly created post of advertising manager for Koehring. In this capacity, he will direct the product advertising and publicity programs for all Koehring divisions and subsidiaries. Jaeger was formerly manager of advertising and publicity for Bucyrus-Erie Co.

E. J. Goes continues as publicity manager for Koehring.

←For more facts, circle No. 267



pays off again

OR TOUCH AND GO SHIFTING WITH SYNCHROTOUCH TRANSMISSION CONTROL

Caterpillar research gives you an advanced new way to shift gears. Operator simply dials desired gear. Second shifting. Available for DW20 and DW21

Caterpillar's No. 1 Project* comes one of the most important earthmoving developments of recent years—SynchroTouch Transmission Control. This remarkable advance combines economical direct drive transmission with the easiest, fastest shifting imaginable.

SynchroTouch Transmission Control is an optional arrangement for Cat DW20 and DW21 Tractors that permits effortless shifting of transmission gears by means of a gear selector conveniently placed near the operator's right hand. To shift up or down, the operator simply moves a selector switch to the desired gear. In less than a second engaged. The standard foot clutch is retained, but used only when starting from a standstill.

Fully job tested in the field, SynchroTouch Transmission Control is ready now to give you these important benefits:

1. Faster shifting—for faster cycles, more payloads per hour.
2. Significant reduction in operator fatigue—for more daily production.

3. Economical direct drive transmission—uses standard DW20 and DW21 transmission and clutch components.
4. No special maintenance required.

Add SynchroTouch Transmission Control to either the new DW20 or DW21 (Series G), and you have the last word in modern, high-speed, efficient earthmoving equipment. Both of these outstanding Caterpillar wheel-type Tractors are delivering more horsepower (345 HP), rim-pull and capacity than ever before. Now, see them in action with the SynchroTouch Transmission Control!

Call your Caterpillar Dealer and ask to see a new DW20 or DW21 with SynchroTouch Transmission Control as soon as possible.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**BORN OF RESEARCH
PROVED IN THE FIELD**

HOW IT WORKS

SynchroTouch Transmission Control uses hydraulics as a source of power and is activated and controlled electrically. When the desired gear is dialed on an upshift, the following sequence occurs in a split second:

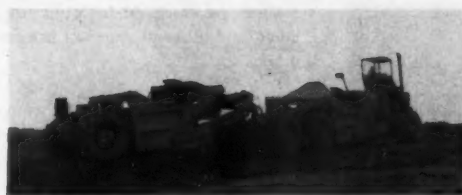
1. Control Unit signals master clutch to disengage.
2. Control Unit signals hydraulic system to shift transmission to neutral. Shifting collar is disengaged from present gear.
3. Generators notify Control Unit when transmission is synchronized for shift (shifting collar and desired gear at same RPM).
4. Control Unit signals hydraulic unit to shift to desired gear. Shifting collar engages new gear.
5. Control Unit signals master clutch to re-engage. SHIFT COMPLETE.

*Caterpillar's multimillion-dollar research and development program—to meet the challenge of the greatest construction era in history with the highest production earthmoving machines ever developed.





One of two LeTourneau L-50 double-bowl scrapers, self-loading even in black hardpan or black gumbo, picks up 50 yards of sandy clay (62 tons) in one minute during their shakedown on an industrial development job in Dallas, Texas. Each of the eight wheels is powered by an electric motor.



Loads from both bowls are ejected at the same time. Electric motors operating through pinion gears, drive the tail gate forward then retract it.

Electric-wheel scrapers meet earthmoving test

The first two production models of the R. G. LeTourneau L-50 double-bowl scraper are proving their worth on a land-development project in Dallas, Texas. In addition to posting a satisfactory production record, the electric-wheel scrapers are doing things that no other scraper can.

The monstrous earthmover loads itself. No push-dozor is necessary. The rig picks up a 50-yard load in less than a minute. With power on all eight wheels, the scraper gouges even tough material that would normally require ripping. It operates in mud and mire that would bog down conventional scrapers.

The two rigs are helping to build the fill for a 50-acre industrial development near the Trinity River at the intersection of Interstate Highway 35E and State Highway 183. Trinity Bend Co. of Dallas is the developer and contractor. The fill material, which is mostly a sandy clay, is being hauled from a large borrow area near the site.

Electric motors drive wheels

Invented and manufactured by R. G. LeTourneau, Inc., Longview, Texas, the L-50 scraper substitutes electric motors for drive shafts and gear trains. Each of the eight wheels, riding on a 30x33 6-ply tire, is powered by an electric motor mounted at the end of the axle. Direct current to the motor is supplied by a combination ac-dc generator. The generator unit, located beneath the operator's cab, is powered by a Cummins 600-hp V-12 diesel. Individual ac motors, working through rack and pinion gears, control the motions of the tail gate, apron, pan, and steering.

The operator's job is a simple one. Sitting at a control panel in the cab, he flicks the switches that control each motion. Speed is regulated by a hand-operated potentiometer. Maximum speed is about 16 mph.

Modifications improve machines

Since these were the first two production models, it was to be expected that modifications would have to be made to meet the rugged job conditions. During the shakedown period, the wheel motors and generator were modified to stand up under the grueling pace of 20 hours a day, 6 days a week. A LeTourneau mechanic and engineer were constantly on the job to observe the performance of the machines and to make the necessary repairs.

**For
PERFECT
BALANCE
Specify**



**Genuine
MECHANICS
Roller Bearing
UNIVERSAL JOINTS**

For Cars • Trucks • Tractors • Farm Implements • Road Machinery •
Aircraft • Tanks • Busses and Industrial Equipment

The Mechanics Universal Joint has a brake mounting that attaches the brake disc, or drum, to the transmission flange—*independent of the bolts that attach the joints to the flange*. This exclusive Mechanics feature makes it possible to balance the flange and drum—as a unit.

The accurate balance of the brake assembly is not disturbed, when installing the joint, because

the bolts that attach the brake drum do not attach the universal joint to the flange—nor carry the universal joint torque. Thus the balance obtained on the balancing machine is maintained after installation of the joint in your product.

Let our engineers show you how this exclusive MECHANICS Roller Bearing UNIVERSAL JOINTS advantage will help improve the operation of your product.

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MECHANICS UNIVERSAL JOINT DIVISION

Borg-Warner • 2030 Harrison Ave., Rockford, Ill.

For more facts, use Request Card at page 18 and circle No. 268

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A Koehring 1205 with a Hendrix 4-yard bucket and five International Model 75 Paywagons also worked the job. The haulers took 14 yards on the 3,000-foot haul and handled about 250 loads per 10-hour shift. This spread accounted for about half the total production.



Material dumped by the Paywagons is spread by an Allis-Chalmers HD-16 tractor-dozing on the fill. The dragline and haulers moved about 3,500 yards per 10-hour shift; the double-bowl scrapers boosted the production to 7,200 yards per shift.

After about the first month, the new machines, in motion most of the time, were grinding out a good production record. On a 3,000-foot haul (one way), each scraper made about 57 loads during a 10-hour shift. Each scraper carried about 50 loose cubic yards, or 38 pay yards (compacted yards in the fill).

During the 2-week period prior to the date the job was visited, the rigs had an availability of about 85 per cent. This meant that the two scrapers were adding about 3,700 pay yards to the fill during each 10-hour shift.

In the sandy clays of the borrow area, the LeTourneau rig was able to pick up a load in about one minute. Under ideal conditions, the scraper has loaded itself in 20 seconds. Normally, one bowl is loaded at a time, but it is possible to load both bowls at once.

In the deeper cuts of the borrow area, a black hardpan shale was encountered. The material was so tough that the bucket of a 4-yard dragline could not bite into it. The big scrapers were called in to see what they could do. They lumbered into the pit, squatted down, pulled with all 8 wheels, and the black stuff boiled up into their bowls.

In wet weather, the contractor put the big scrapers to work when other equipment had to be shut down. With their tremendous tractive power, the scrapers could load themselves even on wet and slippery ground.

Operators break in easily on the new rigs. One of the operators reported that he was able to handle the machine after riding an hour and a half with a trainer. After another two days of work, he was thoroughly familiar with the operation.

In addition to the two double-bowl scrapers, the contractor worked a fleet of five International Model 75 Paywagons loaded by a big Koehring 1205 4-yard dragline. Moving on well maintained haul roads, the bottom-dump wagons made about 250 loads per 10-hour shift. Each carried 14 pay yards on the 3,000-foot haul.

This meant that the five bottom-dumps and the 4-yard dragline were moving about 3,500 pay yards per 10 hour shift. It makes an interesting comparison to put this figure alongside the 3,700 pay yards being hauled by the two L-50 scrapers. THE END

Ask a hard rock driller
what he likes about a

TRACDRIL

—He'll answer:

**OPERATING EASE
and
SAFETY!**

DRILLERS LIKE automatic brake on CP Tracdril that grabs and holds instantly when controls are released. Standing or drilling, the rig holds firm.



DRILLERS LIKE the way CP channel constructed drill carriage provides rigid, steady mounting . . . eliminates distortion, resists crowding and prevents sag during horizontal operations. Feed always even. If steel breaks, drill will not plunge.



Here's "designed-in" safety. Release tramming motor throttle on CP Tracdril and multiple disc brake slams on instantly, automatically. No possibility of moving when rig is standing or drilling.

Dual control panels keep all hydraulic positioning levers within easy reach—drilling or tramming. U-Arm mounting lets operator convert fast from "hard high horizontals" to "snake holes". Two 6 HP "Power Vane" reversible motors give top tractive effort. Hard hitting CP-450DR Deep Hole Drill uses coupled drill steel, sinks 3-inch holes to 75 feet. Get complete information on Tracdrils from your CP equipment distributor, or write to Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.



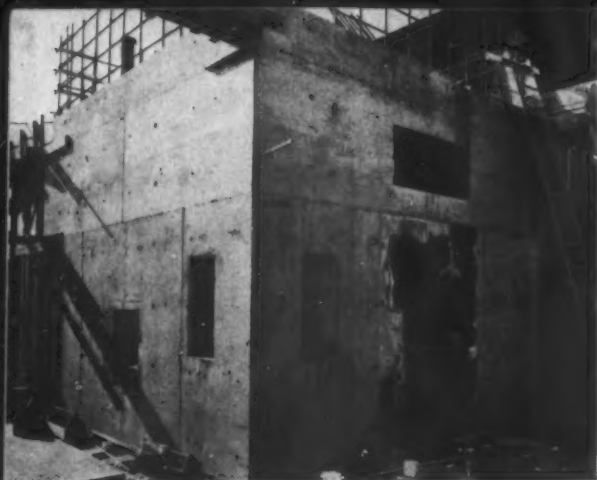
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AIR COMPRESSORS • PNEUMATIC TOOLS • ROCK DRILLS • DIESEL ENGINES • ELECTRIC TOOLS • BLAST HOLE DRILLS • PUMPS • AIR-BLAST BITS

For more facts, use Request Card at page 18 and circle No. 269



DRILLERS LIKE easy hole-spotting of CP Tracdril and the "deadman controls" insure operator safety. Drill moves ahead, backs, turns, pivots at a touch. Easily hauls 600 c.f.m. compressor up 10% grade.



Ordinary concrete meets tough sp

This concrete hot cell, which absorbs gamma radiation, was built with a carefully designed mix for its 5½-foot-thick walls and 4-foot-thick floor and ceiling for Picker X-ray Co. in Cleveland. Selection of the mix came after other types of construction were evaluated and discarded.

Proximity, safety, and economy were the three objectives kept in mind in the design of the Picker X-Ray Co.'s first radioisotope-handling facility, which was also the first installation of its kind to be built using ordinary concrete.

Located on a 10-acre site at 1020 London Road, Cleveland, the \$500,000, 2-story Picker Research Center has been built principally to study the application and future use of X-rays and isotopes in medical and industrial fields.

The heart of the research center is a high-level radioisotope test cell, designed and equipped to encapsulate one million curies of cobalt, the largest radioactive sources used for medical and industrial radiation and radiography processing. This hot cell is a working or storage area, so designed that its shielding walls and roof will reduce the radiation intensity of its contents so that the radiation count outside the cell is well within the maximum permissible dosage for its operating personnel.

The cell is a 6-foot square on the inside, surrounded by 5½-foot-thick concrete walls and 4-foot-thick concrete floor and ceiling. A total of 271 cubic yards of reinforced concrete surrounds the cell.

Shielding requirements

The specifications for shielding walls and roof of a hot cell require sufficient weight to absorb gamma radiation, stability under radiation, structural strength, ease of placement or fabrication of shielding materials, and low cost in place.

Ordinary concrete was used rather than lead, which tops the list of dense materials available for shielding, because the cost of lead would have been about 50 times greater.

Concrete was selected over concrete block on the basis of density (it is 10 per cent more dense than block), uniformity (mortar joints require that successive courses be stepped to offset joints), flexibility (either 4-inch or 8-inch block is used or premium prices are paid for special sizes), and economy (solid block construction is 1.2 times more expensive than poured concrete).

Once concrete had been selected as the shielding material for the hot cell, an economical and effective mix had to be created. A variety of concrete mixes, utilizing many types of aggregates, were evaluated. Very

high-density concrete mixes, utilizing steel punchings and chilled iron aggregate, were eliminated early. Such mixes, weighing up to 150 pounds per cubic foot, can cost as much as \$375 per cubic yard for materials alone.

On the other hand, concrete containing ordinary aggregates and sand can cost as little as \$15 per cubic yard for materials and can cost as

Measure new 34 cu yd
International Payscraper advantages

NEW power-to-payload walloping, jam-proof ejection



You can heap up to 34 cu. yd. on a 2-axle International 295 Payscraper (or a 3-axle "495" model). You can operate as fast as 32 mph.—faster, even than smaller rigs of other makes.

You've got industry-topping, power-to-payload wallop in these giant new models. You get the sock of 375 high-torque turbocharged diesel "horses" from International's fuel-thrifty new DT-817 six-cylinder diesel. You get direct, push-button starting; all-altitude high-efficiency performance.

Exclusive bowl "with a flare" loads and keeps bigger heaps!

Exclusive new Payscraper tapered bowl design out-cycles "slow loaders," "load spillers," and "reluctant dumpers." Widest of all cutting widths—131 inches—lets scraper wheels and pusher operate inside the cut, the best traction zone. Wide-cutting bowl and center rolling boil-in speeds heap loading. The tapered bowl is a superior heapholder even at the faster haul speeds. Obstruction-free bowl provides fast, positive jam-proof ejection.

Operators become full-time earthmovers!

Minute-stealing operating delays are eliminated, with speed-gaining, balanced design. The 295 Payscraper operator, for example, commands ample power and

traction to pull out of 90° turns—even on mud—without time-losing back-ups.

The operator rides in cushioned comfort in a justment seat that smothers bumps. He has responsive power brakes, "control tower" vision, flush deck. For the first time in big 2-axle scraper history, the operator becomes a confident, full-time, full-capacity mover!

From power to push-block—from fuel thrift to the fill—compare new giant-sized International scraper models to anything else on wheels. Now they lead in turbocharged diesel horsepower. Maximum exclusive tapered-bowl scraper advantages against advanced design. Size up strength—ease of speed—capacity! See your International Construction Equipment Distributor!



**International
Construction
Equipment**

International Harvester Co., 180 North Michigan Ave.
A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... and Equipment.

cost, safety problems on radioisotope-handling unit; is less than for lead, concrete block, special mix

crushed stone; and 38.5 gallons of water per cubic yard of concrete. The water reduction obtained with the admixture permitted the use of an additional 140 pounds of dolomite per cubic yard. This final mix weighed 155.4 pounds per cubic foot.

The heat generated in the 18-inch-thick test wall accelerated the set of the mix so that the concrete was hard enough to support a man's weight only one hour after placing. It clearly indicated that in the 66-inch-thick walls of the hot cell, thermal cracking and shrinkage stresses could be expected to develop.

Three alternatives were open: cool-

ing the water and/or aggregate to offset the heat generated; reducing the amount of cement in the mix; or using a retarding admixture.

A second mix was designed with Pozzolith retarder, which would provide the same water-reducing action and simultaneously retard concrete setting by two hours. This meant that the maximum temperature reached in the center of the concrete mass was considerably lowered. This mix met all performance specifications, but it set too rapidly to permit adequate detrainment of air.

A third mix was then prepared. It contained 16 cc of Master Builders air-detraining agent per sack of cement. The readjusted mix produced a slump of an easily placeable 4½ inches, and met the density spec with less than 1 per cent air.

All of the 1,320 cubic yards of ready-mix concrete used on the job was supplied by the Cleveland Builders Supply Co. and batched at its ultramodern Butler mixing plant, which has electronic controls to turn out concrete to formula. During concrete-placing phases, CBS delivered an average of 12 loads of concrete daily in Rex 6-yard transit mixers mounted on White trucks.

Four test cylinders were made on every 60 yards of concrete. Two cylinders broken at 7 days averaged out at 3,803 psi; two broken at 28 days averaged to 5,736 psi. The mix finally selected was found to be so readily workable that the contractor chose to use it for the entire south half of the second floor, even though specifications required its use only over the hot cell.

Cell design

The massive, hollow, steel door shell was filled with concrete in three separate pours, with the top of each pour dished enough to eliminate any continuous joints. The floor of the cell is stainless steel, and the walls are lined with ¼-inch steel plate to a height of 11 feet. Numerous small access ports are located on the front and side faces of the cell, and a 20-inch square port opens from each side.

The cell is a 3-story structure, containing 300 cubic yards of concrete and weighing more than 600 tons. Placement was done in three phases of one story each. The separate sections were joined with 3×10-inch keys at each floor line. Cell forms were stripped in seven days; each placement was handled in regular 8-hour working days. With good shale underground, sufficient foundation was accomplished with 5-foot-wide footers going 18 inches underground. About 1,140,000 pounds of concrete was used for shielding at a cost of \$12,100 in place.

Personnel

Over-all operations for Picker X-Ray were directed by plant superintendent Art Fingerhut and Eugene W. Coleman, manager of the Radioisotope Laboratory. Contractor was Sam Emerson Co., Cleveland, whose operations were managed by project supervisor Ed Uhinck. THE END

For more facts, circle No. 270

Wallop...NEW speed loading, NEW full-power 90° turning



Three "295's" of a 6-unit Payscrapper fleet, building new super-highway near Beloit, Wisconsin. Both the "295" and "495" feature International's fast-acting, finger-tip controlled model 280 control unit—built to give you high capacity; simple adjustments; low upkeep! Positive, forced ejection, plus gaping 98"

apron opening, assures fast, positive dumping of all materials. Even gummy, barrel-sized blue clay chunks are quickly ejected—as this "495" view proves, on an operation of V. H. & M. Construction Co., Denham Springs, Louisiana.



Purchasing:

Cost-plus contracts



by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

Often, the purchasing agent will be required to prepare a cost-plus-fee contract or subcontract, with or without penalty and bonus clauses, but he may not find any standard form quite suitable.

The following suggested form by the Associated General Contractors of America is so arranged that other forms may be prepared, using those clauses and articles that are applicable. The form is available at 10 cents each, 50 cents per dozen, or \$2.50 per hundred from the AGC, 20th and E Sts. N. W., Washington 6, D. C. This is a cost-plus-fixed-fee contract:

This agreement, made the day of in the year Nineteen Hundred and by and between (name of firm) hereinafter called the contractor, and (name of owner) hereinafter called the owner.

Witnesseth, that in consideration of the compensation hereinafter specified, the contractor and the owner agree as follows:

1. Scope of the work: This agreement shall provide for the construction and proper completion of (description of project) in full accordance with the existing plans and specifications of (name of architect or engineer) and any subsequent plans and written instructions which shall be within the original intent of the existing plans and specifications.

2. Obligations of the contractor: The contractor shall exercise, for the owner's benefit, his best knowledge and skill in planning the work, purchasing materials, furnishing labor, supplying equipment, and performing all other services incident to the work. He shall cooperate fully with the owner and architect or engineer and faithfully execute the intent of this agreement.

3. Obligations of the owner:

a. As full payment for the services rendered by the contractor in executing the work, the owner shall pay the contractor a service fee as specified in Article 5.

b. The owner shall pay the cost of the work as specified in Article 6.

c. For the use of equipment the

owner shall pay the contractor an equipment charge as specified in Article 7.

d. For the use of tools, accessories, and appurtenances furnished by the contractor, the owner shall pay the contractor a tool charge as specified in Article 8.

4. Status of the architect or engineer: The architect or engineer shall prepare all plans and specifications needed to designate properly the quality, quantity, and dimensions of

the work, except such working drawings as he may direct the contractor to supply. He shall cooperate fully with the contractor in executing the work, and his decision on the intent of the plans and specifications shall be final. It is his duty to inspect the work, and he shall use his offices to see that the owner shall receive full value for monies expended and to see that the contractor shall receive full compensation for his work.

5. Service fee: The service fee shall be \$..... and shall include and cover payment for the following:

a. The contractor's profit.

b. The professional services of the contractor, his executive officers and members of his firm.

c. The services of the contractor's

main office employees, except when executing drawings, design, or estimation of plans required by the contract.

d. The expense of branch office not maintained exclusively for the contract.

e. All general expense of maintaining the contractor's organization and doing business not directly occasioned by this contract.

6. Cost of the work: The cost of the work shall include and cover all expenditures made in good faith by the contractor or the owner to execute the work of this contract which are not covered by the service fee, equipment charge, or the tool charge.

7. The equipment charge: The equipment charge shall include

Only proven International delivers bonus

Blade a bonus load—flip the Shuttle-Bar—and you reverse the TD-15 instantly and reposition fast! New TD-20 and TD-15 owners, the country over, are reporting "next-size-bigger" production from these proven models!



Bonus track roller life really counts for TD-20 owner, working in the "grinding compound" water-borne granite particles. Precision-lapped, floating, metal-to-metal seals in proven International track rollers provide never-before-equalled protection to keep out abrasives and keep lubricant in!

Years-Proven Planet Power Steering, unequalled undercarriage strength and ease of control make TD-24 what many contractors call "the rock special" of all king-sized crawlers. "Live track" with both tracks pulling full time means bigger every push!



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A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

cept who cover payment for the service of each piece of equipment, except special equipment which the contractor may use to execute the work, providing said equipment shall be installed upon the work in good operative condition as certified by a competent inspector selected by the owner.

The amount of the payment for any piece of equipment furnished by the contractor, except for special equipment, shall equal the daily rental rate herein specified for that piece of equipment, multiplied by the number of days elapsing between the date of loading that piece of equipment for transit to the site and the date of reloading it for transit from the site. These dates shall be the dates certified by the bills of lading.

Any special equipment not owned by the contractor, which he may be required to purchase to execute the work, shall be paid for by the owner and on completion of the work all such special equipment shall be sold and the proceeds thereof credited to the owner.

Repairs to equipment shall be paid as a cost of the work. (The detailed schedule is intended to be supplied by the individual firm. Since in this contract repairs are charged as a cost of the work, they should therefore be omitted in determining the equipment charge. Where desirable, the contractor may pay for repairs and cover them in the fixed-rate charges.)

8. Tool charge: All tools when

This is the forty-fifth of a series of articles on Construction Management by George E. Deatherage, P. E., consultant to National Schools of Construction Management, P. O. Box 510, Weiser, Idaho, and P. O. Box 8415, Charlotte, N. C. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by the National Schools.

brought upon the work shall be listed, inspected, and classed, according to their condition, as new, 100 per cent new; good, 75 per cent new; fair, 50 per cent new; poor, 20 per cent new; valueless, 0 per cent new.

On completion of the work, all tools shall again be listed, inspected, and classified as herein stipulated, and the difference between the values

as listed first, and as listed second, multiplied by the current market price, shall constitute the tool charge for each tool. Lost or destroyed tools shall be paid for at the first per cent rating multiplied by the current market price.

9. Rebates, revenues, discounts, etc.: The owner shall receive the full benefit of all rebates and refunds, and he shall receive the full benefit of the discount on all sums paid directly with his capital, if paid in time to secure trade discount.

The contractor shall deliver to the owner all revenue derived from commissary store or other service maintained in connection with the work, and all revenue derived from the sale of anything pertaining to the work, except those things belonging to the contractor.

10. Financing the work: The owner shall furnish all funds for and shall provide payment for all expenditures incident to the execution of this agreement, except expenditures which the contractor may make in fulfilling the covenants of the profit fee.

11. Expenditures: No expenditure, transaction, or subcontract involving more than \$..... shall be made in connection with this contract without the approval of the owner, except that the owner may authorize the contractor in writing to make certain expenditures in accordance with the contractor's judgment, in which case such authority shall constitute the owner's approval of the expenditure. The owner shall have the right to make any expenditure directly, or to arrange for purchase directly with any dealer.

12. Payments: All payments shall be made by the owner in accordance with statements issued and certified by the contractor and approved by the architect or engineer, and payments may be made either directly to vendors or indirectly by reimbursing the contractor.

Payrolls, equipment rentals, team and truck hire, and other expenses which the contractor may find it expedient to pay weekly or oftener shall be paid by the owner within three days after date of receiving the contractor's statement including such items. All other indebtedness shall be paid by the owner within 10 days after receiving the contractor's statement covering such indebtedness.

On account of the contractor's profit fee, the owner shall pay the contractor each month per cent of the cost of the work for the preceding month. This payment shall be made within 10 days after date of receiving the contractor's certified statement of the cost of the work. When the amount paid the contractor on account of the profit fee shall have equaled 90 per cent of the total profit fee, no further payment shall

dependability tough-job performance!

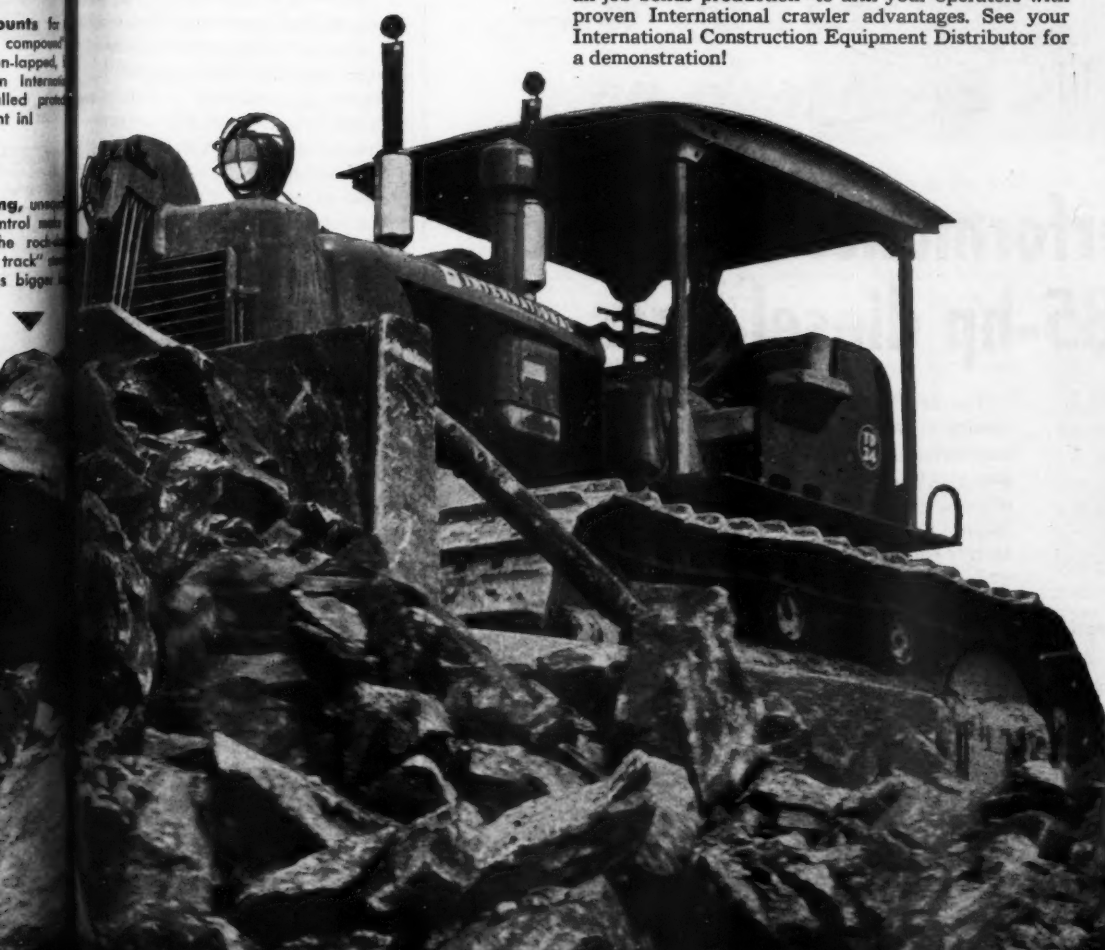
Only International provides heavy-duty-type rollers—the "originals," since 1956, with car-type, floating metal-to-metal seals. Only International gives you heavy-duty roller bushings of king-size lube reservoirs, plus husky, big-diameter roller shafts. Exclusive pressure relief passages guarantee positive prevention of seal blow-out or damage from power lubricators! Measure the advantages of proven International roller design in longer wear and downtime prevention!

Only International gives you the proven power efficiency and design simplicity of sintered metal-faced, dry-type engine clutches. With simple, uncomplicated operation, this heat-defying clutch operates efficiently at all temperatures—reduces lever pull to 50%—needs no cooling system—delivers proven upkeep!

Only International gives you proven exclusive cycle-speeding, load-increasing features—that pile up bonus production on tough or easy jobs. Only the TD-24 gives you Planet Power "live" track steering advantages—eliminates "dead-track drag"—pulls or pushes the same big loads on turns or straightaways—gives Hi-Lo power-shifting of either track on-the-go! And both TD-20 and TD-15 give you 6-speed, full-reverse transmissions with "single-stick" shift, and fast Shuttle-Bar forward-reverse control!

Big International crawlers give you smooth, high-torque, proven 6-cylinder diesel performance! You get 6-cylinder smoothness without "balancer" complications! For seconds-fast starting, lightning "load-follow" governing, and fuel-metering accuracy, compare proven International diesels!

See what it means in tough-job performance—and all-job bonus production—to arm your operators with proven International crawler advantages. See your International Construction Equipment Distributor for a demonstration!



(Continued from preceding page)

be made on this account until the work is completed, at which time the owner shall pay the contractor the remaining 10 per cent.

13. Auditing: The contractor shall keep during the progress of the work, and preserve for one year after final settlement, accurate and detailed accounts of all disbursements, and he shall give the owner access at any and all times to all books, accounts, documents, and correspondence of the contractor which pertain to the execution of this contract.

If the owner so desires, he shall have the right to place competent employees of his own in any position of accounting, timekeeping, or checking, provided that such employees shall perform their respective duties in accordance with the contractor's plans for handling the work, and in cooperation with the contractor's employees.

14. Statements: Statements of expenses to be paid weekly shall be accompanied by certified copies of payrolls and original invoices covering all expenditures not carried on the payrolls.

Monthly statements shall be accompanied by original bills and invoices and shall be certified by the contractor.

On or about the 15th of each month, the contractor shall submit to the owner a correct statement of the total expenditures during the preceding month and the total expenditures to date. He shall at the same time furnish the owner with a progress report of the work.

15. Subcontracts: All subcontracts shall be let by the contractor (or the owner) with the approval of the owner (or the contractor).

After the award has been made to any subcontractor, that subcontractor shall deal directly with the contractor, who shall have full authority over the execution of subcontract and shall be responsible for coordinating the work of subcontractors with his general plan of executing the work.

16. Insurance: Insurance against loss and damage to all plants owned by the contractor shall be carried by the contractor, and cost of that insurance shall be included in and covered by the equipment charge. The insurance on plant and special equipment shall be paid for by the owner as a cost of the work.

All other insurance which the owner or the contractor desires to carry shall also be paid for as a cost of the work.

17. Laws, permits, licenses: The contractor shall abide by all legal restrictions and obligations of the locality wherein the work is located. In the event that any such legal restriction or obligation should be violated by the contractor, or any of his employees, the owner shall be indemnified and held harmless by the contractor from any legal action resulting from such violation.

The contractor shall obtain in the name of the owner all permits and licenses necessary to execute the work, the cost thereof to be paid as a cost of the work, and the owner and the contractor shall comply with all legal requirements relative thereto.

18. Liens: The contractor shall indemnify the owner and hold him harmless from all liens and other incumbrances against the premises on account of debts or claims alleged to be due from the contractor to any person, including subcontractors, employed by or under him.

19. Time of completion: The contractor shall commence work within . . . days after signing this contract, and shall complete the work by . . . Should the contractor be delayed in completing the work by any strikes, fire, or other circumstances beyond his control, the time of completion shall be extended for such time as will compensate for the time lost by reason of all such acts or circumstances.

20. Owner's right to terminate contract: The owner shall have the right after . . . days' written notice to terminate the contract if the contractor's service is unsatisfactory.

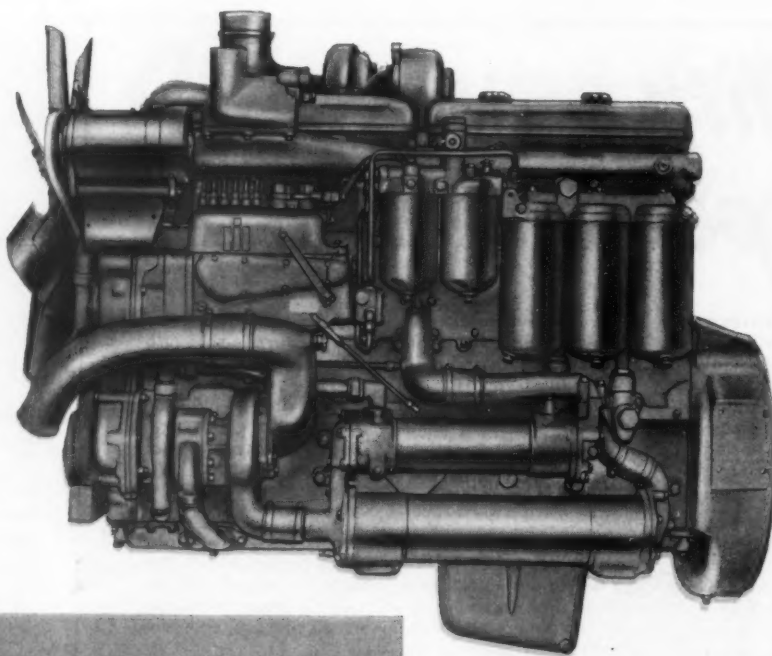
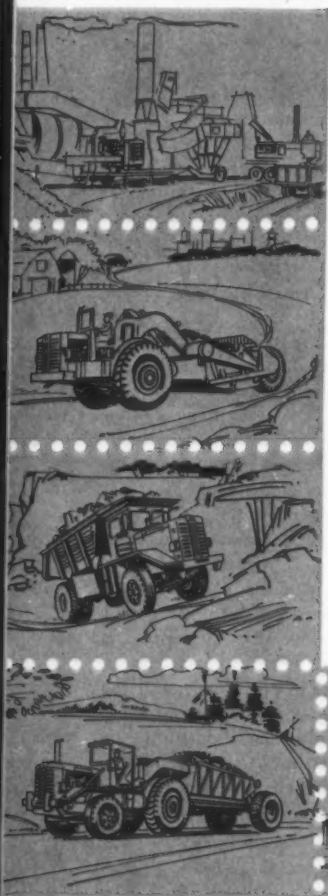
In the event that the owner shall terminate the contract, he shall have the right to take possession of the site and all materials and plant thereon and to complete or employ any person to complete the work, provided that he shall assume all liabilities and obligations which the contractor has assumed in good faith, and pay the following:

a. A per cent of the profit fee equal to that per cent which the total cost of the work up to the time of termination is of the estimated cost of the work.

b. The cost of the work up to the time of terminating the contract as specified in Article 6.

c. The equipment charge as specified in Article 6.

CONTRACTORS AND ENGINEERS



NEW UDT-817 DIESEL is a 4-cycle turbocharged engine with 817 cu. in. displacement and max. torque of 1,040 lbs. ft. @ 1,400 rpm.

New power, performance and price leader in the 385-hp diesel class

Here are three fast facts about the turbocharged, new direct-start, direct-injection International 6-cylinder UDT-817 diesel that can mean big savings on your construction equipment:

POWER—The UDT-817, developing 385 hp, leads the field in its size class.

PERFORMANCE—The specific fuel consumption of the UDT-817 is the lowest in its size class.

PRICE—The UDT-817 is the lowest priced engine in its size class in dollars per horsepower.

A wide variety of accessory equipment including air cleaners, flywheels for leading makes of torque converters and clutches, torque converter cooler, air control compressors, safety shut-offs, instruments and engine controls can be furnished to meet your installation requirements. Base, radiator, hood and dash, clutch and power take-off are available for complete power units.

The new 250-hp. D-817 is the naturally aspirated version of this same basic diesel engine. Your nearby International Power Unit Distributor or Dealer can give you full details of either new model or on the 30 other diesel and carbureted construction equipment engines in his line. All 32 engines have one common feature—fastest payback power for users.



**International[®]
Construction
Equipment**

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

For more facts, use Request Card at page 18 and circle No. 272

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d. The tool charge as specified in Article 8.

21. Contractor's right to terminate the contract: The contractor shall have the right to terminate the contract after ten days' written notice under the following conditions:

a. If the work should be stopped by court order or other public authority for a period of more than ... days through no act or fault of the contractor.

b. If the owner should fail to pay the contractor in accordance with the terms of this contract.

c. If the owner should not permit the contractor to commence work within ... days after signing the contract.

In the event that the contractor shall terminate the contract as provided in this article, he shall have the right to remove all things from the site which belong to him and return to the renters all things rented by him to prosecute the work; and the owner shall pay him the sums stipulated in paragraphs a, b, c, and d of Article 20, and shall assume all liabilities and obligations which the contractor has assumed in good faith.

22. Title: The title of all materials for which the owner is required to pay and of all work either completed or in the course of construction shall be in the owner. Title of all equipment not purchased by the owner shall be in the contractor or in the renter in the case of rented equipment.

23. Assigning the contract: Neither party to this contract shall assign the contract or any interest therein, without the written consent of the other party. The contractor and the owner for themselves, their successors, executors, administrators, and assigns, hereby agree to the full performance of the covenants herein contained.

In witness thereof, they have executed this agreement the day and year first above written.

In a cost-plus-fee contract with penalty and bonus, the following clauses should be substituted in the above form:

5. The profit fee: In the event that any significant change shall be made in the plans, the estimated cost shall be revised according to any change in quantities that may result. This adjusted cost which shall be agreed upon by the owner and the contractor shall be designated as the revised estimated cost and shall be the cost of the work considered in determining the amount of a penalty or bonus.

The profit fee shall be \$....., providing the actual cost of the work as specified in Article 6 is within 5 per cent of the Revised Estimated Cost.

If the actual cost of the work is greater than the revised estimated cost by more than 5 per cent, the contractor shall credit the owner with ... per cent of the difference between the two amounts, but in no case shall the contractor pay an amount greater than ... per cent of the profit fee stipulated in this article.

If the actual cost of the work is

less than the revised estimated cost by more than 5 per cent, the owner shall pay the contractor in addition to the stipulated fee ... per cent of the difference between the two amounts. But in no case shall the owner pay the contractor an additional amount greater than ... per cent of the profit fee stipulated in this article.

20. Owner's right to terminate contract:

a. A per cent of the profit fee equal to that per cent which the total cost of the work up to the time of termination is of the revised esti-

mated cost of the work.

(Next month's article will deal with "Inspection Department: general functions.")

Armco Division expands

The Armco Division, Armco Steel Corp., Butler, Pa., has begun a \$17 million program for additional stainless steel facilities. The construction contract for a new Butler Works unit, to be known as Plant No. 2, has been awarded to Rust Engineering Co., Pittsburgh. Contracts have also been awarded for the installation of new machinery and equipment.

The buildings at Plant No. 2 consist of a main structure and a number of auxiliary buildings and service units. The project will be completed late next year.

Mobile Drilling appoints

H. E. Davis has joined Mobile Drilling, Inc., Indianapolis, Ind., as district sales and service representative for 19 western states. He will work out of the Denver office. For 10 years, Davis was a material-handling engineer with the California Division of Highways.

Loading old pavement on U.S. 20 near Rockford, Illinois, with new TD-20 Four-in-One. Owner is Rockford Blacktop Co. One owner reports replacing 3 power shovels and a dragline with one 3-cu yd 4-in-1 on concrete pavement removal!

How big clam-action 4-in-1's can replace boom-type rigs ...on slam-bang pavement removal

You get 32,200 lbs of max. torque push in the new TD-20 Four-In-One—to "crowd-home" the bucket in extra-tough material. This big rig also gives you 41,200 lbs of bucket-heaping, pry-over-shoe break-out force!

Both the 3-cu yd TD-20 and 2¼-cu yd TD-15 Four-In-Ones have weight-saving, capacity-adding high strength Man-Ten steel in frame and lift arms—and super strong, abrasion-resistant T-1 steel in buckets.

Both these big rigs have International 6-cylinder diesel power wallop and smoothness. Both have 6-speed, full-reverse transmissions. Both have fast "single-stick" shift and Shuttle-Bar forward-reverse control to speed-up loading cycles!

And only International Drott rigs have shock-swallowing Hydro-Spring protection—that "gentles" machine-mauling impact forces by a whopping 67%!

Prove you can streamline tough pavement removal jobs with a big 4-in-1—for a fraction of what you'd pay for equivalent boom-type rig capacity. Move the selector lever—see what it means to command versatility unlimited of clamshell, dozer, "scraper," and Skid-Shovel under one-man control. See your International Drott Distributor for a 4-in-1 demonstration!

For more facts, use Request Card at page 18 and circle No. 273



Exclusive clamshell bottom-dumping allows easing concrete chunks into truck—reduces impact on truck body. Four-in-One bottom-dumping also eliminates the sticky materials problem!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin



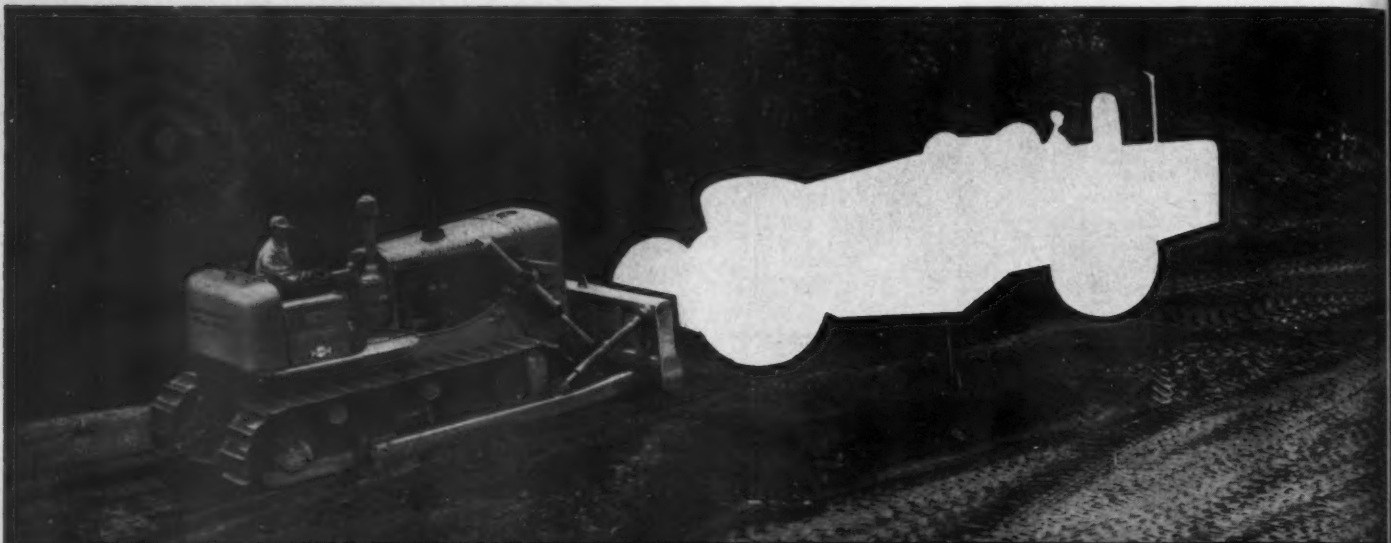
**INTERNATIONAL
DROTT**

Same cut... same pusher 5% more dirt in 42% less time

**DAY IN...DAY OUT, THIS ALLIS-CHALMERS 9½-YARD TS-160
OUTWORKS ITS LEADING COMPETITOR...AND DELIGHTS ITS OWNER***

This is no demonstration setup. It's a road job* where these two self-propelled scrapers worked every day . . . push-loaded by the same Allis-Chalmers HD-16 torque converter tractor. That made every loading cycle about as identical as

they'll ever get. And hour after hour, the TS-160 moved out of the cut with a heaped load in an average of 42% less time than its 9-yard companion of another make. *This is extra work power you can turn into profit!*



Scraper X, heaped loads in 35 seconds, 9 yards heaped



TS-160, heaped loads in 20 seconds, 9½ yards heaped



TS-160
9½ yards
heaped,
155 net engine
horsepower

* Further details on request

You may be surprised . . . may even challenge these facts. But facts they are, and we invite you to check them on *your* job, with *your* stop watch. Call your nearby Allis-Chalmers dealer now. He'll provide the TS-160 . . . when and where you say. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with ALLIS-CHALMERS
...power for a growing world



For more facts, use Request Card at page 18 and circle No. 274

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AUGUST,

Armco Drainage promotes; erects office building

F. G. Hunt has been promoted to senior sales engineer at the Middletown, Ohio, headquarters of Armco Drainage & Metal Products, Inc. He has been assigned to the drainage and allied products sales staff. Ray S. Welsent, sales engineer in the drainage and allied products department of the company's Central Division, has been named Cincinnati-area sales manager to succeed Hunt.

Construction is under way on a new office building to house the 130-man headquarters staff of the company, which is a subsidiary of Armco Steel Corp. The first of three buildings, it is scheduled for completion about December 1. Of the other two buildings, which will be erected later, one will house a testing laboratory and exhibit hall; the other will be for new offices of the Central Division. Total cost of the three one-story buildings will be \$750,000.

Allis-Chalmers plans new acquisitions

Allis-Chalmers Mfg. Co., Milwaukee, plans to acquire Lakefield Mfg. Co., Wauwatosa, Wis. Lakefield fabricates component parts for tractor shovels and side booms used on construction machinery. It has been a supplier to the Tractomotive Corp., Deerfield, Ill., which A-C also plans to acquire.

A new one-story brick building at the junction of U.S. 422 and State Route 14 in Harrisburg, Pa., is the new home of A-C's Harrisburg branch. Approximately 44,000 square feet of office and warehouse area is provided by the new building, which is located on an 8-acre tract.

Raymond International forms Marine Division

A Marine Division has been formed by Raymond International Inc., New York City, to specialize in waterfront construction in New York Harbor. The division will construct piers, docks, wharves, retaining walls, bulkheads, and similar waterfront structures. Its purpose is to organize the company's participation in public and private construction programs in the metropolitan area.

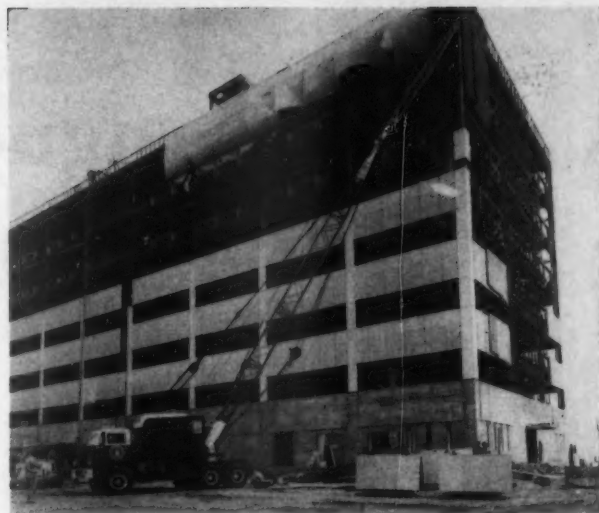
Eugene F. Gibbons is general manager of the division.

Goodyear builds test road to wear tires

A 3-mile gravel road, designed to cut, dig, and gouge the tread off pneumatic tires has been added to the tire-testing facilities operated near San Angelo, Texas, by the Goodyear Tire & Rubber Co., Akron, Ohio. The oval is constructed of variegated stone, including tire-slicing flint. The 32-foot ditch-to-ditch roadway was designed from Michigan State Highway Department standards.

The new road will be used for field research experiments on the wearing ability of new rubber compounds for passenger-car and truck tires.

STONE FACING for the \$4½ million Harbor Department administration building at Long Beach, Calif., is placed by a 25-ton Lorain Moto-Crane, Model MC-425. The rig uses a 90-foot boom and a 30-foot jib for the work.



14,000 feet of pipe pile and no field welding

"Faster from Foster" Pipe Piles Help Contractor Cut Costs on Pittsburgh Expressway

Specifications on Pittsburgh's Crosstown Boulevard permitted 9 gauge spiral-weld pipe piles, lighter walled than previously used, but every bit as rugged. After test driving, the contractor knew the exact lengths required. Foster supplied 9 gauge piles in these lengths and the contractor was able to drive easily and successfully. No excess waste, no cropping, no costly down time to weld together short (or standard) lengths on the job.

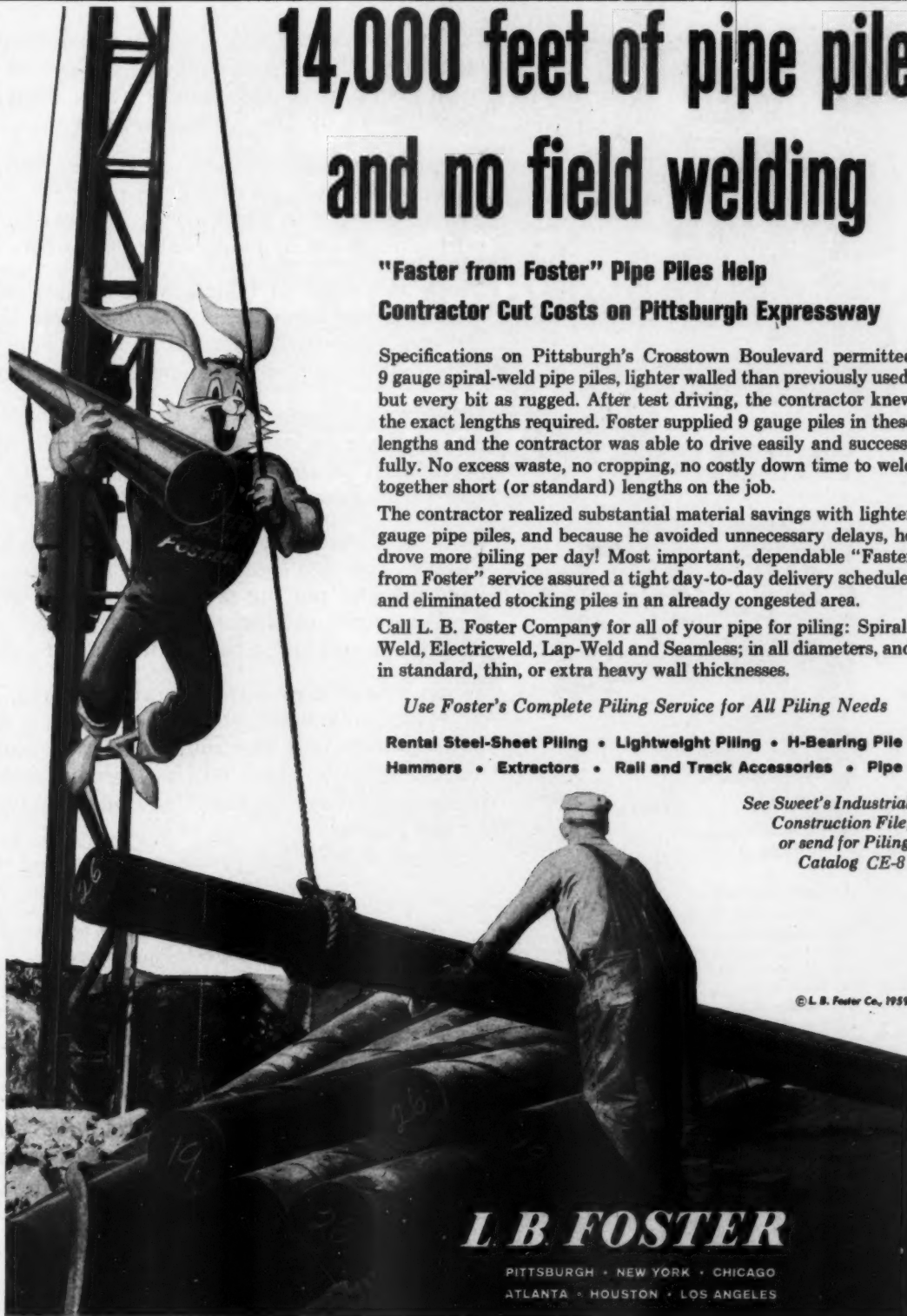
The contractor realized substantial material savings with lighter gauge pipe piles, and because he avoided unnecessary delays, he drove more piling per day! Most important, dependable "Faster from Foster" service assured a tight day-to-day delivery schedule, and eliminated stocking piles in an already congested area.

Call L. B. Foster Company for all of your pipe for piling: Spiral-Weld, Electricweld, Lap-Weld and Seamless; in all diameters, and in standard, thin, or extra heavy wall thicknesses.

Use Foster's Complete Piling Service for All Piling Needs

Rental Steel-Sheet Piling • Lightweight Piling • H-Bearing Pile Hammers • Extractors • Rail and Track Accessories • Pipe

See Sweet's Industrial Construction File, or send for Piling Catalog CE-8



L. B. FOSTER

PITTSBURGH • NEW YORK • CHICAGO
ATLANTA • HOUSTON • LOS ANGELES

For more facts, use Request Card at page 18 and circle No. 275

Designed for today's concrete placement techniques

Uni-Form Panels have changed over the years to keep pace with modern concrete forming practice.

Today's Uni-Form Panels weigh a little more (about $\frac{1}{2}$ lb. per foot) than other pre-fab form panels because *they are designed and built to meet today's requirements.*

We know that if the assembled concrete form is to have the structural rigidity necessary to withstand today's concrete placement techniques and high rates of pour, the individual panels which make up the form must have great inherent strength.

We produce the strongest form panel we know how to build. The great strength—and extra weight—of Uni-Form Panels is due almost entirely to the special "T" section steel frame which supports the struts or load bearing members of the panel.

Most specification concrete does not permit deflection in the forms. If the form panel does not have the strength to take the stresses imposed by normal concrete construction practices, it is a liability that can cause serious problems.

Uni-Form Panels are designed to take the full strength of the tie, plus a wide safety factor to avoid any possible deflection or permanent set in the load bearing member. Concrete formed with Uni-Form Panels will be straight and true.

Because they are so strong, you don't have to "baby" Uni-Form Panels. *You don't have to make major changes in your method of handling and placing concrete.* You can apply the heaviest practical pressures and highest pouring rates to a Uni-Formed concrete form with assurance that it will stand up and take it.

When you rent or buy any pre-fab form, it will pay you to consider carefully what you're getting. If you want a panel that is built to give you maximum forming speed, economy, efficiency, and service life—look to Uni-Forms. More contractors are using them every day because Uni-Forms deliver where it counts . . . on the job.

Write for the UNI-FORM Panel Catalog. It contains complete details on the industry's most modern and flexible concrete forming system.

UNIVERSAL FORM CLAMP CO.

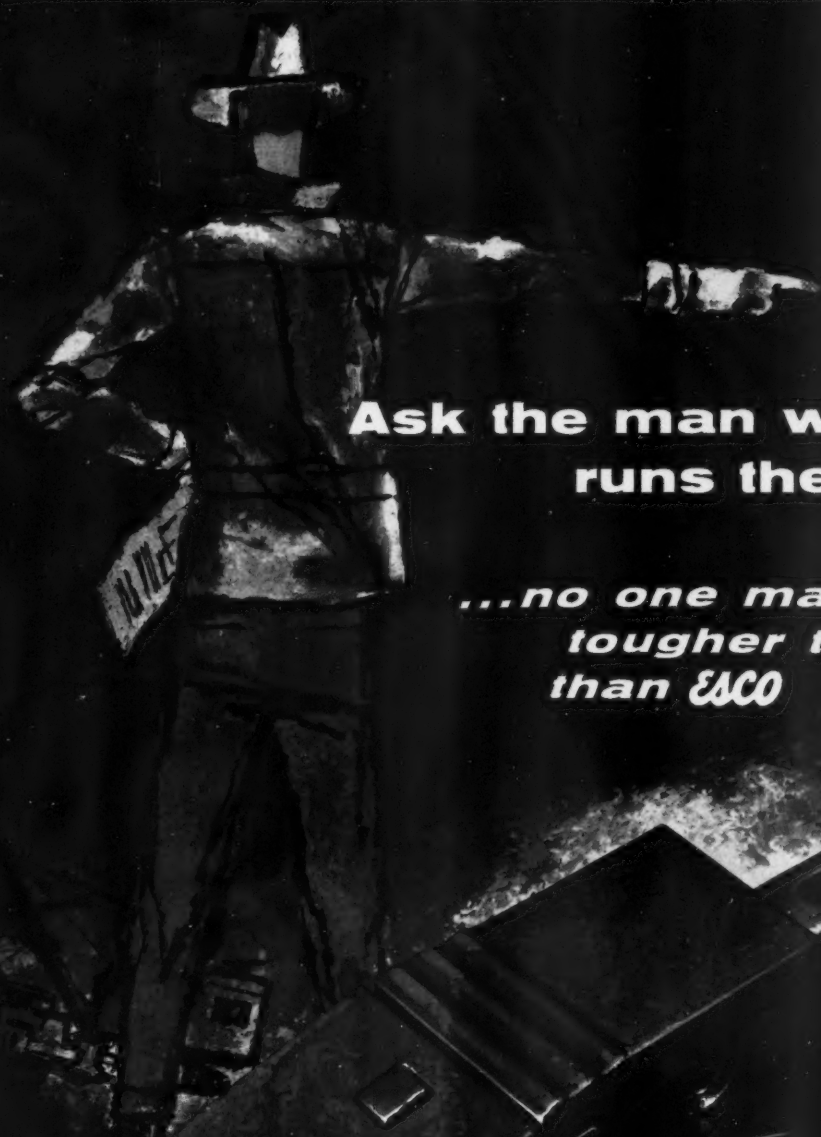
"Products from the Gold Tool Room"

1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:

ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

For more facts, use Request Card at page 18 and circle No. 276



**Ask the man who
runs the job!**

*...no one makes a
tougher tooth
than ESCO*



**The construction industry
looks to**



Electric Steel Foundry Co., PORTLAND, OREGON

See reverse for shapes and size range ➤

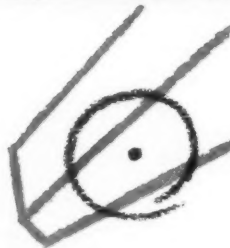
The right design, the right steel, the right
shape make *ESCO* Points and Adapters
right for every digging condition.

Here are the points to remember..

12M ALLOY STEEL

ESCO 12M Points are the toughest you can buy. Developed through years of research for the construction industry, cast ESCO 12M is carefully heat treated to produce the finest steel made for the severe shock and abrasion encountered by points and adapters.

RIGID QUALITY
CONTROL TESTS
ASSURE
TOUGHNESS,
HARDNESS



Every ESCO Point is Brinell tested to assure the exact degree of shock-absorbing toughness and abrasion-resisting hardness for longer digging life. Be sure to look for the Brinell mark on every ESCO Point you buy.

8 POINT SHAPES

You can select from eight different shapes to find the point that matches your digging conditions. ESCO Points are designed by bucket and excavation specialists who know how to achieve top digging performance. The self sharpening design of an ESCO Point makes it start sharp and stay sharp.

ESCO Points and Adapters for all digging equipment

Your local ESCO dealer can supply Points and Adapters for all your digging needs. By using ESCO Points and Adapters on all your equipment you can cut costs further by reducing your point inventory and consolidating purchases. Call your ESCO dealer today for details. He's listed in the yellow pages of your telephone directory. Or, write direct.

GENERAL PURPOSE

ROCK

ROCK PICK

PICK

SHARP FLARED

SHARP

SHARP LONG

RIPPER

ESCO Point shapes start sharp, stay sharp and last longer under any digging condition.



Electric Steel Foundry Company
2157 N. W. 25TH AVE. • PORTLAND 10, OREGON

MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
OFFICES IN MAJOR PORTLAND CITIES
ESCO INTERNATIONAL NEW YORK, N. Y. • IN CANADA: ESCO

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AUGUST, 1

Construction management offered in two schools

The National Schools of Construction in Weiser, Idaho, and Charlotte, N. C., are offering a resident training course in construction management. The course is based on the 9-volume "Manual of Advanced Construction Management" by George E. Deatherage, whose articles appear monthly in **CONTRACTORS AND ENGINEERS**. The course will extend for 120 classroom days, divided into two terms of three months each with a one-week break between the two terms. The first class begins September 28, 1959, and a new class will start every three months.

To enroll in the school, an applicant must be 21 years of age or over and have a high school education plus two years practical work in construction, or have completed two years of college business, engineering, or science and be able to read simple drawings.

Some of the topics covered in the course are: contract documents, general organization; engineering department; planning and production departments; purchasing department; inspection division; safety department; job management; highways, dams, and bridges; industrial relations department; clerical department; and starting work in the field.

More information about the course may be obtained from the school at P. O. Box 527, Weiser, Idaho; or P. O. Box 8243, Charlotte, N. C.

Sealing cracks, joints in concrete pavements

Two papers on "Sealers for Joints and Cracks in Concrete Pavements" are contained in Bulletin 211 from the Highway Research Board. The first paper, on laboratory tests of sealers for sawed joints, covers the work from 1955 through 1957 in a continuing program of extensibility tests on such sealers, both conventional and in the developmental stage.

The second paper, on comparative testing of joint sealants in 16 laboratories, reports on results obtained in a critical study of the bond-ductility, flow, and penetration tests used for evaluating pavement-joint and crack-sealing compounds.

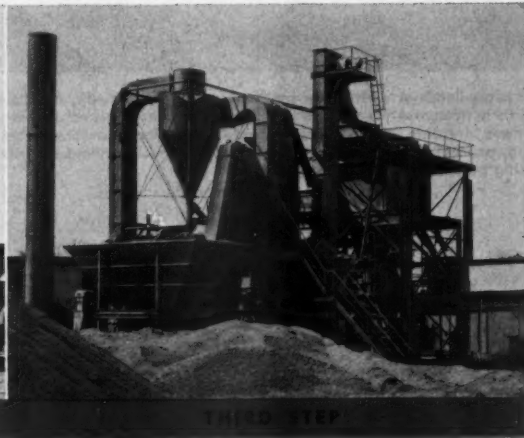
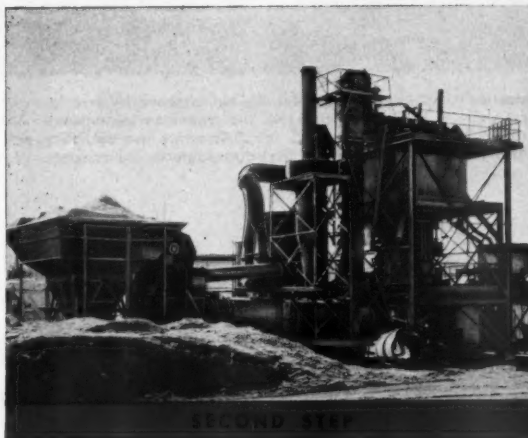
Priced at 50 cents, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Dill Mfg. marks 50 years

The Dill Mfg. Co., Cleveland, celebrates its 50th anniversary this year. At the same time, Arthur P. Williamson will mark 50 years of service as president and treasurer of the company. He is one of the founders.

The company manufactures valves and valve stems for the aircraft and automotive industries, tire accessories and repair equipment, including Dill electric vulcanization equipment.

SPREADING GRAVEL to build up a road in Custer County, Okla., are two Huber-Warco motor graders, a 7D with push-block and a 5D-190. This road is part of an extensive widening and paving program on roads that will carry traffic to the new Foss Reservoir that is under construction west of Arapaho.

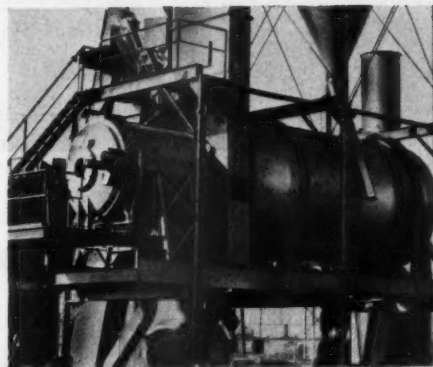


Step-by-Step Improvement

Many successful contractors have the problem Ben M. Hogan of Little Rock solved. He had a two-ton mixer capacity asphalt plant of another make that was costing too much money to operate—in maintenance, payroll, fuel and low capacity. Since he had four modern Simplicity plants, he knew what his cost per ton should be to produce asphalt. Yet his obsolete plant was a major investment which to scrap would be an unnecessary waste.

His solution was to make step-by-step improvements. First he had Simplicity System Company install complete new screening equipment. The following season, Simplicity mixing and weighing equipment were added. Finally, the Simplicity Feeder Bin, Double Shell Dryer and Hot Elevator were installed. The plant is now about 80% Simplicity and is producing greater capacity at much less cost.

More and more contractors are learning that Simplicity units can be added to other makes of asphalt plants to increase production and lower cost. If you would like to consider step-by-step improvement, our engineers will make suggestions at your request. There will be no sales annoyance. The figures will speak for us.



Simplicity 10' x 20' Dryer Assembly

Savings are particularly dramatic when a Simplicity Double Shell Dryer replaces Single Shell Dryers.

Ben Hogan replaced two single shell dryers with a 10' x 20' Simplicity Double Shell Dryer. A Memphis operator replaced four single shell dryers with one 10' x 20' Simplicity. An industrial plant replaced two single shell dryers with a 10' x 20' Simplicity. Another replaced a 45' single shell dryer with a 10' x 20' Double Shell Dryer.

In every instance, the owner's records have proven a substantial gain in production and profits.

DEPENDABLE

THE SIMPLICITY SYSTEM CO.
FROM BUILDER TO BUYER
BETWEEN MEN WHO KNOW
CHATTANOOGA, TENNESSEE

For more facts, use Request Card at page 16 and circle No. 278



This self-propelled machine, made by Pemco, Inc., Roselle, Ill., inserts plastic strips to form transverse joints in runway pavement at the Naval Auxiliary Air Station near Meridian, Miss. Two 12½-foot X 3-inch Form-Con joints, hand-fed to the rig, are held by the mechanical fingers; hydraulic cylinders will bring the placing bar just above the concrete.



One man operates the rig, assisted by two laborers. On this job, the transverse joints were placed every 15 feet. As strips are set, they are vibrated so that aggregate in the concrete is pushed gently aside.



J. M. Cummings, of American Sisalkraft Corp., displays the vinyl plastic joint he invented. When the re-usable strip is pulled from a joint, the strip inside is removed first, allowing the envelope to collapse.



Two Koehring pavers are working on the 25-foot lanes of the runway, though three were sometimes used to place the concrete. The Blaw-Knox paddle-type spreader is leveling the mix to an 8-inch depth so that wire reinforcing can be placed. Another 4 inches brings the slab to full depth.



A Ferguson gang-vibrator unit, pulled by the first spreader, insures thorough consolidation of the first lift. The second spreader, a transverse finisher, and float finisher follow; then the joint installer comes along, followed by conventional finishing and curing equipment.



The trailer water tank pulled by each paver is supplied with water by a shop-built 4,000-gallon tank mounted on a Euclid belly-dump. A Gorman-Rupp 3-inch pump delivers the water through an overhead pipe mounted on a framework over the engine.

Contractor on air station keeps finish close to operation of three pavers as crews form

by BILL ALLEN, field editor

A new method of forming contraction joints is proving its worth on the paving of the Naval Auxiliary Air Station near Meridian, Miss.

The method makes use of a plastic strip to form the transverse joints. The strip is vibrated into the concrete by means of a special machine in the paving train. The next day, the strip is pulled from the pavement by hand; the joint is later filled with sealing compound.

Some of the advantages of the new method are:

1. The machine places the plastic strip in the concrete with speed and accuracy.
2. After the strip is placed, it stays in position with its top flush with the concrete; it does not tend to pop up. A minimum of hand finishing is required to smooth over the top of the joint.
3. The plastic forming materials are inexpensive (about 95 cents per foot) and can be re-used many times.

Always on the lookout for improved methods of paving, Hyde Construction Co., Jackson, Miss., is the first contractor to put the new machine to work on an airfield paving job. (A similar rig has been used to form contraction joints on an 11-mile highway paving contract north of

Syracuse, N. working on involving 20 concrete paving of dirt, at t

Base

It's a big Named McC facility will train pilots is unique. runways, la a giant wi centroid ar mately one eration bui and other o ways conn area with The end 1 is built of crete, whil built of 11 crete.

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money-saving arrangement of conveyors at the aggregate batching setup eliminates the need for cranes. An undertrack unloader leads to a 160x2-ft Barber-Greene conveyor that feeds a 119x2-foot B-G stacker conveyor. The stacker rides a radial track to reach the stockpiles. The track is carried on concrete cap supported by wooden piles.



Aggregates leave the stockpiles through air-activated gates in the recovery tunnels, then ride conveyors to this central collection point. A Barber-Greene 207x2-foot conveyor carries the material to the batcher.



The flow of materials to the Johnson batcher is regulated with remote controls by one operator. Another man in the control shack controls batching. An International truck with Heil body heads in to pick up a load.

form contraction joints with plastic strips

Syracuse, N. Y.) Hyde is currently working on a \$6.9 million contract, involving 208,000 cubic yards of concrete paving and 4,263,000 cubic yards of dirt, at the air station.

Base has unique design

It's a big contract for a big base. Named McCain Field, the \$60 million facility will be used exclusively to train pilots for Navy jets. The design is unique. The four 8,000x200-foot runways, laid out like the blades in a giant windmill, stem out from a centroid area. In this area, approximately one mile square, are the operation building, hangar, fire house, and other operational facilities. Taxiways connect the centroid parking area with the four main runways. The end 1,500 feet of each runway is built of 12-inch reinforced concrete, while the middle 5,000 feet is built of 11-inch nonreinforced concrete.

At present, only two of the four runways are under contract. Hyde expects to complete the paving of the two runways and the centroid parking apron by May, 1960. The first class of cadets is scheduled to enter the training station in September, 1961. Construction is under the supervision of the Bureau of Yards and Docks of the Navy.

With good men running the up-to-date equipment, the paving operation

is moving along smoothly. The plastic joint installer takes its place in the paving train behind the longitudinal float. Manufactured by Pemco, Inc., Roselle, Ill., the self-propelled rig is roughly T-shaped. One leg of the machine installs the center-line joint while the bridge section sets in the transverse joint. One man operates the rig, and two laborers assist.

On the transverse joints, two 12½-foot x 3-inch plastic strips are fed into the holding clamps on the placing bar by the operator. The bar, which holds the strip, is then moved by means of hydraulic cylinders to a position just above the concrete. As the bar pushes the plastic strip into the concrete, vibrators set up a high-frequency, low-amplitude vibration. This high-frequency movement tends to push aside the aggregate. It allows the strip to slip into the concrete without leaving a large void along the joint. The holding clamps are then released, leaving the top of the strip flush or just below the surface. Straightedge finishers then work over the joint to smooth out the marks that have been made by the holding clamps.

Plastic strip of special design

Manufactured by the American Sisalkraft Corp., Attleboro, Mass., the high-impact vinyl plastic strip is composed of two sections, an out-

side V-shaped envelope and an inside spreader strip. In pulling the strips on the day after the pour, the spreader strip is first removed. This allows the walls of the V to collapse, permitting the envelope to be removed from the pavement. The resulting formed joint is smooth and clean inside.

No oil or coating of any kind is used on the plastic joint. It can be re-used many times. At the time this was written, the strips had been used about ten times, and little visible wear was apparent. On the highway job near Syracuse, New York, the 2-inch strips were re-used an average of 25 times.

Hyde chose the plastic strip as an aid in stepping up production. Previous attempts with hand-formed joints convinced the contractor that other methods would have to be used to keep the finishing operation up with the production of three pavers. Plans for this job call for a transverse joint every 15 feet, in addition to a longitudinal joint down the center of the 25-foot paving lanes—a lot of joint footage per linear foot of slab. (After watching the performance of the joint installer on this job, C. J. Langenfelder & Son, Inc., Baltimore, Md., decided to use the machine on its big paving contract on the new Washington International Airport at Chantilly, Va.)

Paving train

Two and sometimes three Koehring 34-E pavers are used to mix and place the concrete in the forms. Pavers pull their own water-tank trailers, which are filled by a converted Euclid 4,000-gallon tanker. The first lift of the concrete is leveled off by a Blaw-Knox spreader. Pulled by the spreader is a Ferguson 10-vibrator unit.

After the wire mesh is placed, the second spreader works over the final lift. It is equipped with two vibrators—one on each side. This rig is followed by a Blaw-Knox transverse finisher and a Koehring longitudinal float-finisher. Then comes the Pemco joint installer, two finishing bridges with burlap drags, and a Flex-Plane spray curing machine.

Aggregate handling unusual

At the aggregate batcher, there isn't a crane in sight. All materials are handled by conveyors. The sand and two sizes of gravel are unloaded from railroad cars by an undertrack conveyor that feeds a 119x2-foot radial stacker conveyor. Mounted on rails on a concrete cap, the stacker conveyor swings in a large arc and drops material on one of the three stockpiles. The Barber-Greene conveyor system can unload as many as 40 cars in a day.

The material in each stockpile then



Com. Neel G. Barnaby, resident engineer in charge of construction for the Navy, looks over the 4-barrel box culvert, 840 feet long, which carries a creek under the north runway. Banks are ripped with burlap bags filled with soil-cement. When the bags rot, blocks of soil-cement will be left.

(Continued from preceding page)

passes through a recovery tunnel to a central collection point. From here, the aggregate is carried by a 207x2-foot conveyor to the bins of a Johnson single batch plant. One man in the plant operates the automatic batching setup. A second man in the plant has remote controls that regulate the flow of aggregate and sand from the stockpiles to the bins.

By using the conveyor system, Hyde eliminated the need for two cranes and their operators. Normally, only one man is needed to operate the conveyors. An additional three men are needed when aggregate is being unloaded from the railroad cars. Use of the conveyor system provides a considerable saving over a crane handling setup.

Personnel

The project manager on the job for Hyde Construction Co. is Harry Taylor. The paying superintendent is Bill Steen, Jr. Russell Gilbert is grading superintendent. In charge of the supervision of the construction for the Navy is Com. Neel G. Barnaby.

THE END

Caterpillar film shows new motor grader

A 16-mm sound and color film released by Caterpillar Tractor Co., Peoria, Ill., features the 150-hp addition to the firm's motor grader line. Titled "Cat No. 14," the film shows the machine in a variety of applications. It points out features of the No. 14 new to the 30,000-pound motor-grader class—turbocharger, power brakes, oil clutch, and others. The 8-minute motion picture is available in French and English.

To arrange a showing of the film, contact the nearest Caterpillar dealer.

Pennsylvania highway department news

Brydon H. Lidle has been named director of personnel for the Pennsylvania Department of Highways. He succeeds Robert S. Winchester, who is transferring to Philadelphia as administrative officer of the Penn-Jersey Transportation Study.

Crow construction firm to build Bahamas resort

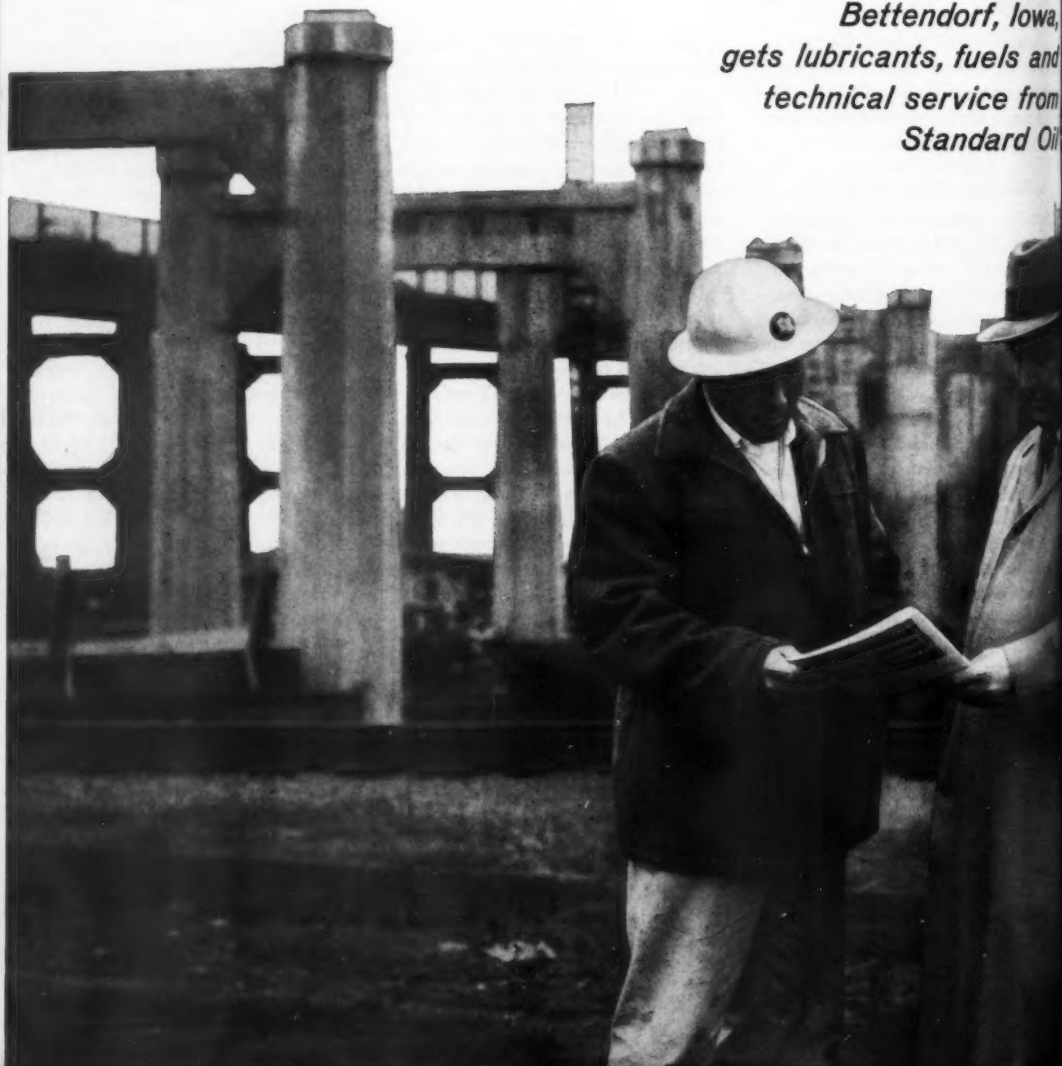
The William L. Crow Construction Co., New York City, has been named to handle construction for the multi-million-dollar resort-marina-arts-and-sports center on Hog Island, The Bahamas. Huntington Hartford, Atlantic & Pacific Tea Co. heir who has acquired about four-fifths of the island, will build and develop the center. Ground breaking is tentatively

scheduled for fall or winter of this year.

Tentative plans call for construction of a hotel, tennis courts, and cabanas along famous Paradise Beach. A golf course, yacht docks, and a 2,200-seat auditorium, divided into separate theaters for dramatic music, and sporting events, also are being studied.

How Standard Oil Provides Support For A Bridge Builder

Dravo Corporation builds Mississippi River span at Bettendorf, Iowa, gets lubricants, fuels and technical service from Standard Oil



The new, addition to which, un way 6 tra to lend su

Standard lubricants miles from Harold Ja all times

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allows this Ellicott hy-
dredge to clean silt from
it areas during clearing
on the Anacostia River
Washington, D. C.



Dredge's suction attachment cleans silt from under piers

Maintenance of a newly completed flood-control and navigation project, which also includes a public marina, is done by the Washington (D. C.) Suburban Sanitary Commission with a versatile hydraulic dredge for clearing the channel in the Anacostia River of silt and debris. The unit is also being used to dredge near and underneath the piers of the marina.

Designed by the Ellicott Machine Corp., Baltimore, the dredge has a plain suction attachment, with a 35-foot reach, to clean silt from difficult areas. To use this attachment, the cutterhead is unbolted and removed; then the attachment is affixed as an extension of the intake pipe.

A wholly self-contained unit, the 12-inch hydraulic pipeline dredge pumps about 150 cubic yards of water-borne solids per hour for a distance of 2,000 feet.

Control the river

The major part of the job was preliminary work on the river itself. Located at Bladensburg, Md., five miles northeast of Washington, the project included dredging, widening the stream, removing sharp bends, re-locating the channel, creating levees from 3 to 18 feet high and up to 118 feet wide, building drainage channels and pumping stations, and constructing new bridges and highways. Plans to revive navigation included construction of the marina, measuring about 1,700x270 feet. Facilities here will total 9 piers and 290 slips. Boats up to 35 feet long will be accommodated.

A minimum height of 15.3 feet for the numerous bridges spanning the river up to the marina assures ample headroom for most craft. This means that average pleasure craft have an unimpeded course from a point some 8 miles up the Anacostia in the marina area to the mouth of the Potomac and beyond.

THE END

Corps school honors I-H vice president

Harald T. Reishus, Construction Equipment Division vice president of International Harvester Co., Chicago, has received the plaque of the U. S. Army Engineer School, Fort Belvoir, Va., for his outstanding contribution to the training programs of the school. Reishus' assistance made it possible for Fort Belvoir's Department of Mechanical and Technical Equipment to keep abreast of new equipment developments in military tractors.

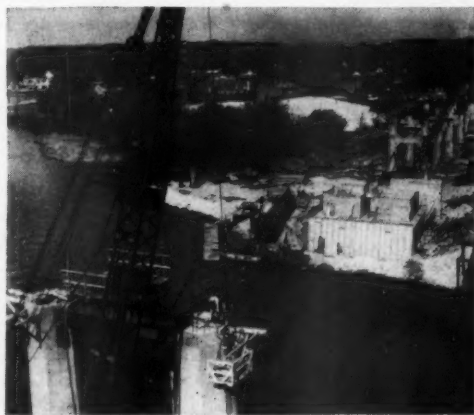
For more facts, circle No. 279

The new, two lane span Dravo is building is an addition to the two lane bridge 72 feet upstream which, until now, has carried all of the U.S. Highway 6 traffic across the Mississippi. Right there to lend support to Dravo is Standard Oil.

Standard Oil storage facilities for the fuels and lubricants are located at Davenport, less than ten miles from the construction site. Standard's Harold Jansen lives in Davenport. He's nearby at all times to render lubrication technical service.

Here's what this means to the contractor: Inventories of lubricants and fuels at the job can be kept to a minimum, yet there is never any waiting for supplies of these products. A trained engineer with ten years' experience in such work is on hand to help maintenance men get the best possible service from equipment. The men who are operating equipment on the job can depend upon the lubricants, greases and fuels being the very top in quality.

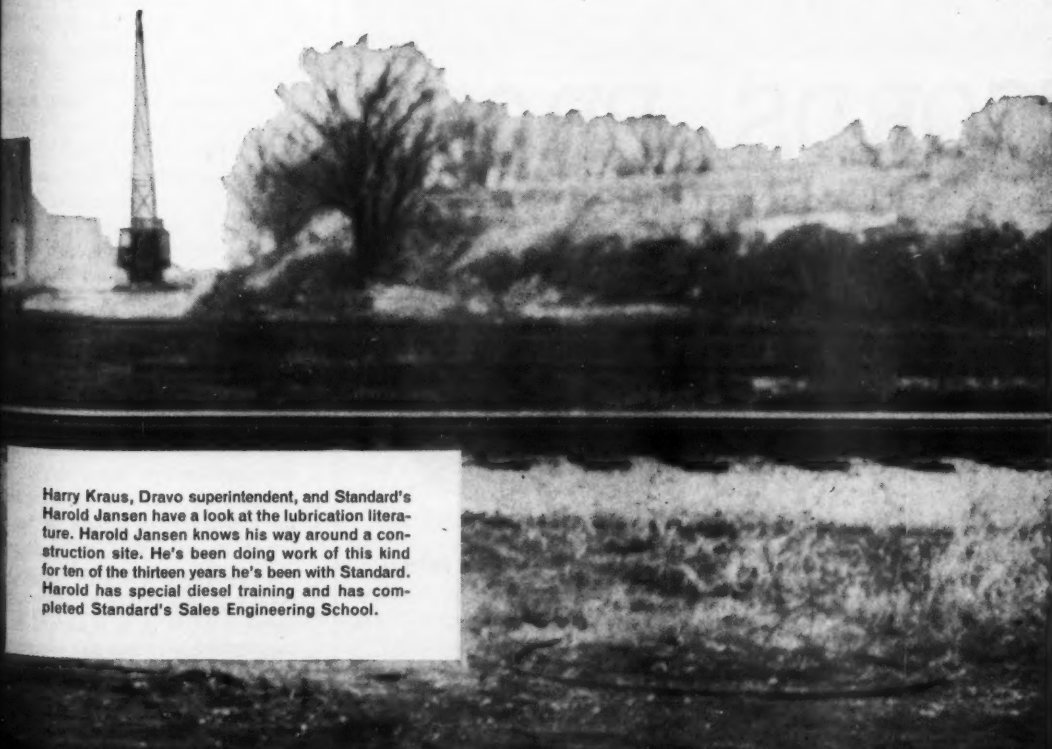
Is this the sort of service you want from a supplier? Get it by calling the Standard Oil lubrication specialist near you. There are 48 Standard Oil district offices and nearly 3,600 storage and warehouse points in the 15 Midwest and Rocky Mountain states served by Standard. One of them is near your job wherever you are. **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**



End of a bottleneck. New 5,504 ft. bridge will be supported by 35 concrete piers, 11 in water and 24 smaller ones on land plus abutments and two anchorage piers.



*You expect more from Standard
and you get it!*



Harry Kraus, Dravo superintendent, and Standard's Harold Jansen have a look at the lubrication literature. Harold Jansen knows his way around a construction site. He's been doing work of this kind for ten of the thirteen years he's been with Standard. Harold has special diesel training and has completed Standard's Sales Engineering School.



Strikes tie up work on Glen Canyon Dam, New York buildings

Work on some of the nation's largest projects was halted early last month as strikes paralyzed the construction industry in two widely disparate regions: Arizona and New York City.

While activity was at a virtual standstill throughout the western state, the most important job affected was Glen Canyon Dam, Merritt-Chapman & Scott's \$421 million project on the Colorado River. In New York, work was tied up on several

large office buildings and apartment houses in the city and two neighboring counties on Long Island.

A dispute over daily subsistence pay of \$6 to each worker brought about the walkout of some 750 workers on the huge Arizona dam. The unions claim the construction city of Page is a "remote" area, while M-C&S declares facilities in the residential area remove it from the remote-area class and thus exempt it from compensatory subsistence pay agreements.

A number of workers on the dam were reported crossing the border into Utah to begin looking for other work.

Meanwhile, disagreement between operating engineers and employer associations have halted work in other parts of the state.

Drivers of ready-mix, sand, gravel,

and asphalt trucks in New York City struck July 1 after a breakdown in contract negotiations. Within a week, some 25,000 building-trade workers throughout the city had been laid off because of the unavailability of building materials.

One building group estimated that if the New York strike continued to the middle of the month, between \$200 million and \$400 million worth of construction work would be affected.

Local 282 of the International Brotherhood of Teamsters, independent, is asking increased wages and a shorter work week in its dispute with 50 concrete, sand, gravel, and asphalt concerns in the city. City and state officials were arranging an early joint meeting of bargaining committees.



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Firestones move more payloads per tire!

Firestone off-the-highway tires lower earthmoving costs by cutting downtime and staying on the job longer! Every Firestone tire is built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires. Tough Firestone treads and sidewalls defy cuts in rubble and shale. And Firestone S/F (Shock-Fortified) nylon cord bodies withstand bruising shock and impact to deliver maximum tire life! Count on Firestone off-the-highway tires for new low costs-per-hour! See your Firestone Dealer or Store and ask about the full line of tubeless or tubed off-the-highway tires and Firestone on-the-job service.



Rock Grip Excavator Wide Base

Rock Grip Excavator

When ordering new equipment always specify Firestone tires—available tubeless or tubed.

Firestone

BETTER RUBBER FROM START TO FINISH

For more facts, use Request Card at page 18 and circle No. 280

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Sunday-pay dispute in California AGC-engineers cleared up by arbitrator

Arbitrator Albert K. Whitton has ruled that where a California contractor runs a 3-shift operation under contract with Local 3 of the operating engineers, a provision in the contract providing that the first shift of the week begins at 8 a.m. Monday rather than at 12 a.m. has the effect of extending Sunday day to 8 a.m. For this reason, he ruled that the contract's Sunday double-time pay applies to Monday preshift work.

It is noted that Peter Kiewit Sons Co. changed to a 3-shift operation in November, 1957, with the AGC master contract providing that "on 3-shift operations, the first shift of the day and of the workweek shall start at 8 a.m. Mondays, and such workweek shall end with the closing of the third or graveyard shift at 8 a.m. Saturday." It is also provided that all work performed between these times shall be compensated "at the applicable overtime rate."

Regarding the "applicable overtime rate," the contract in one place says one and one-half the regular rate shall be paid for all preshift work and all Saturday work, while elsewhere it says double the regular rate apply on Sundays and holidays.

The union's contention, which brought the issue to arbitration, was that the provision, whereby starting and ending times of the normal work week on 3-shift operations were moved forward eight hours, had the effect of moving the end of Sunday to the hour instead of midnight. The company countered by saying the starting-time provision has no effect on the rule that preshift work was to be compensated at time and one-half.

Ohio operating engineers reach 2-year settlement; end state-wide strike

Some 8,000 striking operating engineers went back to work after a contract settlement with the Ohio Contractors Association. The walkout, which lasted about two weeks, affected highway and heavy construction in 76 of Ohio's 88 counties.

The 2-year settlement provides hourly raises of 10 cents, as of May 18, and again May 1, 1960, for all classifications except oilers, who receive 5-cent hikes on each date. In addition, 10 cents per man-hour will be paid into a health and welfare fund, beginning November 1, 1960.

An exclusive referral system, termed "acceptable" by a union spokesman, is also part of the new pact after having been one of the thornier issues during negotiations. According to Federal Mediator Hayward Montoney, provision is made giving priority to more experienced workmen. It is also in the agreement that the employer can reject anyone referred to him and may make request for individuals or groups to be referred, provided they are registered.

Another provision says that in the event any part of the agreement becomes inoperative or is alleged to be discriminatory it will be temporarily suspended and renegotiated.

CONTRACTORS AND ENGINEERS

Chicago labor iron workers win

Highway contractor and Cook County as striking 25-cents-an-hour 2-year contract. Builders' Association out for three. The contract wage rate of wages are from. The same pay by the laborer. Association of C. Two other wound up construction metal workers \$3.75 an hour hour increase.

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Chicago laborers end strike; iron workers, sheet-metal workers wind up contract talks

Highway construction in Chicago and Cook County went back to normal as striking laborers agreed to a 25-cents-an-hour wage boost and a 2-year contract with the Illinois Road Builders' Association. The union was out for three days.

The contract establishes a new wage rate of \$3.02½ an hour, and wages are frozen for the second year. The same package was ratified earlier by the laborers and the Builders Association of Chicago, Inc.

Two other Chicago crafts also wound up contract talks. The sheet-metal workers, who had been getting \$3.75 an hour, received a 20-cents-an-hour increase. The one-year agree-

ment continues 7½ cents an hour health-welfare and 15 cents for pensions.

Ornamental iron workers and the Iron League of Chicago also reached agreement for the next year. The contract increases the hourly rate from \$3.91 to \$4.03, and continues 10 cents for health-welfare, 7½ cents for pensions, and 2 cents for apprentice training.

Pay scales go up for laborers and bricklayers in Gary, Ind.

New contracts were wrapped up by two Lake County, Ind., crafts, while two others collected automatic pay increases of 12½ and 15 cents an hour.

Laborers got 22½ cents in a new 2-year contract. An immediate 12½-cent increase raises the rate for construction and general laborers to \$2.95 an hour, plus 7½ cents for health and welfare. The remaining 10 cents will be paid into a new pension fund, which will be set up next year.

Bricklayers settled for 10 cents in a one-year agreement. The raise brings the hourly scale for journeymen to \$4.05. In addition, employers pay 10 cents an hour for health and welfare.

Northwest Washington engineers, teamsters settle; but AGC is still dissatisfied

New agreements between the Associated General Contractors and operating engineers and teamsters ended a 24-day strike-lockout in northwest Washington, but AGC appeared to be dissatisfied with the hiring provision recommended by a federal mediator to bring about the settlements.

The controversial clause, according to press reports, provides for a "modified" hiring-hall arrangement under which tradesmen are hired according to their "accrued rights in the industry." AGC's Mountain Pacific Chapter took its objections to the National Labor Relations Board regional director while negotiations were in progress, but the case was dismissed. After the settlements with both unions, AGC appealed to the board.

The operating engineers' contract provides a 30-cent-hourly immediate wage increase and another 25 cents on June 1, 1960. Expiration date is changed from December 31 to May 31, 1961. The new rate for bulldozer drivers is \$3.56 hourly, and for power-shovel and crane operators, \$3.93.

The teamsters settled for a 28-cent hourly immediate increase, and 25 cents next year. In addition, the employer's health-welfare contribution is increased 2½ cents hourly.

Oregon pile drivers end six-week walkout; take 53-cent package

Pile driver locals in Portland and Astoria, Ore., agreed to go along with the 53-cent 3-year package accepted last April by other locals of the Oregon District Council of Carpenters, of which the pile drivers are a part.

The Associated General Contrac-

tors, whose members were struck by the pile drivers, agreed to withdraw their breach-of-contract suit against the locals. AGC claimed that the initial acceptance of the 1959 contract by a majority of carpenter locals had put it into effect for all locals, including the pile drivers, according to the voting pattern followed in the past.

The pile drivers get an 18-cent hourly increase, bringing the rate to \$3.38. Another 17 cents is due next year, and 17 cents more in 1961.

Washington, D.C., teamsters end 11-day walkout; win travel-time concessions

Teamsters went back to work in Washington, D. C., after winning concessions from employers on compen-

sation for time spent driving trucks to job sites. Under the old agreement, drivers were paid from the time they arrived on projects with their trucks; the new contract grants a bonus of 75 cents a day starting November 1, 1959, for "running time."

IBT Local 639 went into negotiations demanding portal-to-portal pay and a 50-cent wage increase over two years; it settled for 30 cents in wages over two years and the travel-time allowance.

The 30-cent raise—applied on old rates of \$2 to \$2.40—is payable as follows: 12½ cents retroactive to May 25, 1959; 7½ cents on May 1, 1960; and 10 cents on November 1, 1960.

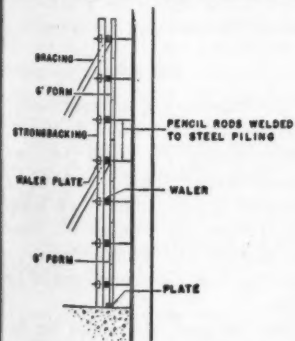
A 5-cent health and welfare fund contribution continues in the new agreement.

12¢ a Square Foot



Best Method to Pour 750 Ft. Retaining Wall Symons Forms, Sheet Piling and Pencil Rod Ties

How to pour a 750 foot lake retaining wall with thickness from 12 to 20 inches and 13 ft. high, faster and more economical. S. N. Nielsen Construction Company, Chicago, had that problem on a 600 unit apartment on Lake Michigan shoreline. Since a fixed core



could not be obtained while using sheet piling only, the superintendent used Symons Steel-Ply Forms with sheet piling and pencil rods as ties.

Was this method a success? After 250 feet of wall had been formed, poured and stripped, the forming costs were computed at 12 cents a square foot.

Contractors are finding almost as many uses for Symons Forms as there are jobs to bid on. It will pay you to send for our FREE form literature. And Symons Forms can be rented with purchase option.



SYMONS CLAMP & MFG. CO.

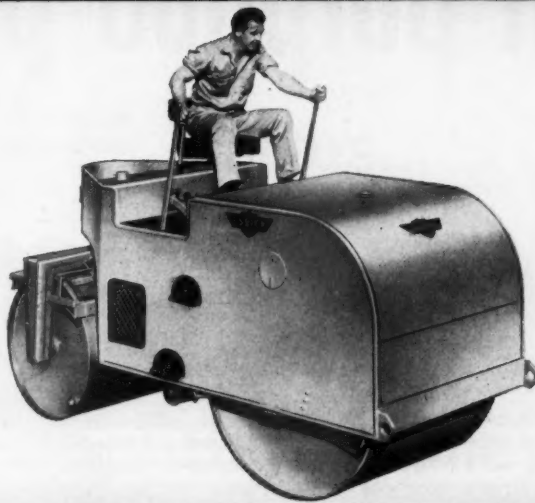
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MORE SAVINGS FROM SYMONS

For more facts, circle No. 281

AUGUST, 1959

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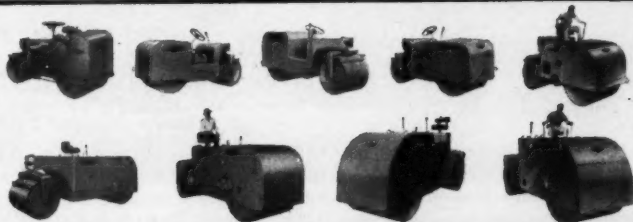


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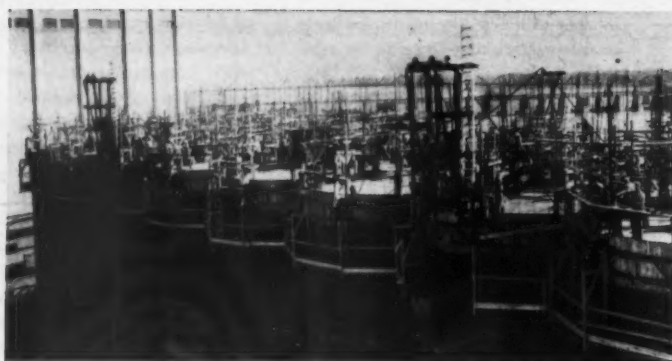
850 Woodruff Lane
Elizabeth, New Jersey

Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 282



Extensive use of the slip-forming technique is made on grain handling and storage facilities for the Russell-Miller Milling Co., Alton, Ill. The 220-foot-high workhouse is completed; the silo and transfer-house group is 85 feet off the ground. Completed silos will be 137 feet high; the transfer house will top out at 224 feet.



Archer deck towers, secured to the slip forms, bring concrete to the men atop the silos. Each tower handles a cable-drawn 4½-ton bucket that dumps to a receiving hopper on the tower.

Slip-forming round the clock

all purpose power line

(20 TO 1650 H.P. IN ONLY 3 CYLINDER SIZES)

Now you can enjoy all the benefits of GM Diesel standardization in every type of equipment and still buy the best makes of equipment on the market



GM Diesel engines are offered in more than 1800 applications of power equipment built by over 250 leading manufacturers—wider availability than any other Diesel.



Only if a power user standardizes on GM Diesel will he get all the benefits of engine standardization—for only GM Diesel covers the entire power range with only 3 cylinder sizes.



Widest parts interchangeability pays off for fleet users in lower parts inventory requirements—for example, many parts for a 33 H.P. "Jimmy" Diesel fit a 1650 H.P. "Jimmy."



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For more facts, use Request Card at page 18 and circle No. 283

Slip-forming a building is like running a race: once you've started, you've got to keep moving. For the men building the grain silos of the Russell-Miller Milling Co. in Alton, Ill., the race went on night and day for ten days.

This is the picture. Transit-mix trucks hurry the concrete to the growing building. Up goes the bucket. Concrete goes into the buggies. Men working shoulder to shoulder, above the buggies to the hungry forms.

On the crowded work platform, other men move swiftly to keep pace with the rising form. Ironworkers slip steel into the silo walls at exactly the right moment. Windows are set in place. Jack rods are lengthened. The level of the form is constantly checked. Some 55 men hurry about their separate jobs.

Up goes the form. Men stuff raw concrete and steel in at one end; a completed building comes out the other end. This is a small miracle of construction for casual onlookers, but not for the crew. It's a matter of feeding the form—keeping concrete and steel going to the boys on top, making sure the material gets to the right place at the right time, and keeping the compressors and hoists running.

Big job

The expansion of the grain storage and handling facilities of the Russell-Miller Milling Co. was a good-sized job. It involved the slip-forming of a separate 220-foot-high work house. The rectangular building will house the elevator legs, scalper bins, and weighing and distributing system for grain.

The contract also called for the construction of a group of 24 storage bins, or silos, each 25 feet in diameter. The group of bins, which rises to a height of 137 feet, adjoins a 224-foot-high transfer house. This rectangular building contains numerous bins, two elevator shafts, and a stair well. The lower level was slip-formed as a part of the silo group. The structures required 9,220 cubic yards of concrete.

McKenzie-Hague-Gilles Co. of Minneapolis was the general contractor and engineer on the project. Most of the actual construction was done by Fruin-Colnon Contracting Co., St. Louis, working under a labor subcontract.

The slip-forming of the silo and

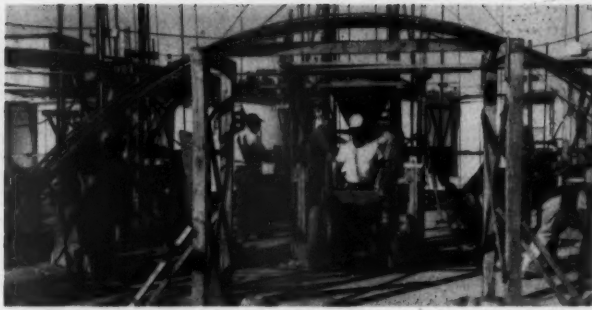
CONTRACTORS AND ENGINEERS



The 252 jacks that lift the slip forms are controlled from a working platform on the form. Generally, the operator opens all valves at once so that the jacks climb 1/2 inch up the rods at one time.



Superintendent Jake Watkins checks one of the jacks. Each jack has two sets of lugs; one set holds onto the jacking bar, the other reaches up and pushes down. Water in the plastic hose provides a check on the slip-form level.



Concrete is wheeled to the open forms by Jackson concrete buggies. The half-round 3/4-inch steel temporarily stored on the wooden rack is reinforcing for the silos. Some 14 buggies were kept busy delivering concrete to the forms. Crews placed some 30 yards of ready-mix concrete per hour during the slip-forming operation.

transfer-house unit was a well coordinated and planned operation. The method of handling the concrete speeded the work. Transit-mix trucks rolled up to two separate hoppers stationed on one side of the building. Each hopper dumped into a 3/4-yard bucket that rode a double cable up to the Archer deck tower. This bucket automatically dumped to a collection hopper. Jackson hand buggies were used to wheel the concrete to the forms. As many as 14 buggies were needed to keep up with the concrete deliveries.

The double cables to the moving bucket were pulled by a split-drum hoist stationed on the ground. The two cables, which went through snatch blocks at the base of the building, kept the bucket from swinging and also pulled it to the tower.

The concrete going into the structure was a 6-sack mix yielding a 3,000-pound concrete at 28 days. The mixture, which contained no additives, was placed with a 5 to 7-inch slump. It was vibrated as it was placed in the transfer house, but silo concrete was not vibrated. Hand finishers, working from scaffolds attached to the moving form, float-finished the inside and outside of the transfer house; only the outside of the silos was given the same treatment.

The structure grew at the rate of about 10 inches per hour. Each hour, 30 yards of concrete was placed in the forms. And each hour, 7,000 pounds of reinforcing steel was added to the walls.

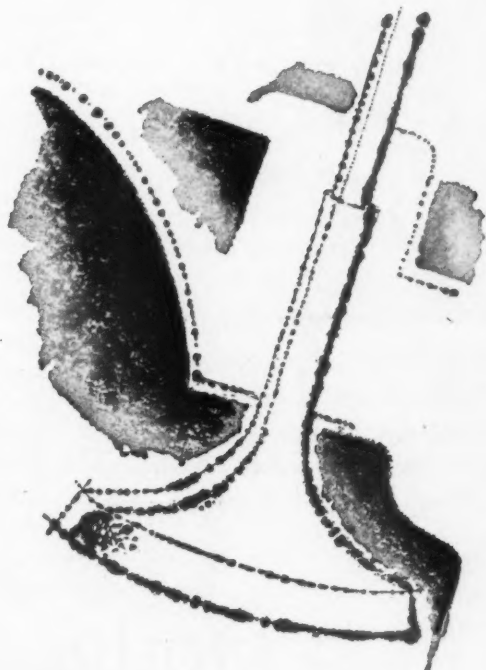
Setting the steel

Two contractor-made booms, riding the form, pulled the steel up to the deck. The load lines were handled by hoists operating from the ground.

On the inside wall of the silos, rings of 3/4-inch bars were laid on the concrete at 6 to 8-inch centers. This horizontal steel was placed in semi-circular sections. Although there was no vertical steel in the inside silo walls, the outside walls were reinforced with vertical bars. The transfer house also contained both horizontal and vertical steel.

It took a lot of jacks to push the big wood form up. For the transfer house and silos, there were 252 air jacks climbing 1-inch rods. Each jack was

(Continued on next page)



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A GMC truck with Transcrete mixer chutes concrete to the receiving hopper that loads the hoist bucket. Another truck, with Rocket mixer, background, feeds the second bucket.



The flow of concrete from hopper to bucket is controlled by this workman. In the background is the Clyde hoist that operates the cables.

(Continued from preceding page)

activated by a diaphragm that pushed on a set of lugs gripping the rod. A second set of lugs held the weight, while the "pushing" lugs reached for a new grip. The jack climbed the rod much as a lineman climbs a wooden telephone pole. He digs in with his spurs and pushes up with his legs. (This is the action of the "pushing" lugs.) He holds on with his arms, while he lifts his feet to get a higher grip on the pole. (His arms are similar to the action of the "holding" lugs.)

The air to the jacks was controlled from a central panel located on the form. Normally, the pressure was put on all the jacks at the same time. This action stepped up the form about half an inch. Individual jacks could be controlled from a valve on the jack. An air pressure of 95 psi was supplied to the system by one of two Le Roi 210 compressors operating from the ground.



A split drum of the Clyde 2-drum hoist hauls in the two cables from the bucket. The hoist is powered by a Minneapolis-Moline 4-cylinder gasoline engine.

The intricate forms were made entirely of wood. A yoke, built of heavy wood members, held a 4-foot slip form made of 1x4 tongue-and-groove staving.

Checking level of forms

The level of the forms was constantly checked by means of a network of plastic hoses filled with water. The level of the water in the vertical hose section indicated the "tilt" of the form. The height of the form above the ground was checked by means of a control stick. Like a long ruler, this wooden measuring stick reached from the base slab, up through the concrete, and to the forms. Its length was extended as the structure grew. The alignment of the forms was checked from the ground with a transit.

Beams are slip-formed

The transfer house contained numerous interior beams and floor levels. The deep beams were built as a part of the slip forming. Their bottoms were supported by tall wooden shores reaching down to a lower beam, or to the base slab. The sides of the beam were slip-formed along with the rest of the structure. Jack rods for the beams rose from the base slab and were kept from buckling by means of wood bracing. The floor, which rested on the beams, were constructed after the slip forming was completed.

Personnel

Mike Velin was superintendent for McKenzie-Hague-Gilles Co. For Fruin-Colnon, James L. Laumann was construction supervisor; Jake Watkins, superintendent; and Jim Christmann, project engineer.

THE END

CONTRACTORS AND ENGINEERS

Knuckles right down to any job!

This rugged heavyweight asks no quarter, it just wades right in and polishes off tough hauling jobs. Two high-capacity "live" rear axles give it better flotation and traction on soft ground. And its 234-hp. engine, with dual carburetors standard, gives this T900 tractor the big-chested power to handle the big hauling jobs without tiring.

The new Dodge tandems are packed with features that make heavy-duty hauling easier and more profitable: New instrument clusters, with tachometer and graduated ammeter and oil pressure gauges standard . . . suspended brake and clutch pedals . . . 90-degree-opening hood for easy servicing . . . air brakes standard on T900 models . . . up to 20 speeds forward. But see your Dodge dealer—and get the heavy-duty reasons why . . .

today,
it's real smart
to choose **Dodge Trucks**



Built throughout for dependable heavy-duty service, this 354-cubic-inch V-8 has dome-shaped combustion chambers . . . double rocker-arm shafts . . . precision timing gears instead of chains . . . positive exhaust-valve rotators . . . hydraulic tappets . . . sodium-cooled exhaust valves. And it develops full power on thrifty regular gas!

For more facts, use Request Card at page 18 and circle No. 285

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AUGUST,

Slewing crane on first job in nation's capital

A German-made slewing crane projecting through falsework of a \$5 million newspaper building addition is a magnet for sightseers in downtown Washington, D. C.

The first of its type to be used in the nation's capital, the crane revolves atop a 78-foot tower and carries an 88-foot boom. It can operate on a radius of 170 feet, picking up concrete from ready-mix trucks on the street below, and placing it at any location in the structure. The capacity of the rig is 3,300 pounds at any radius or position of the boom.

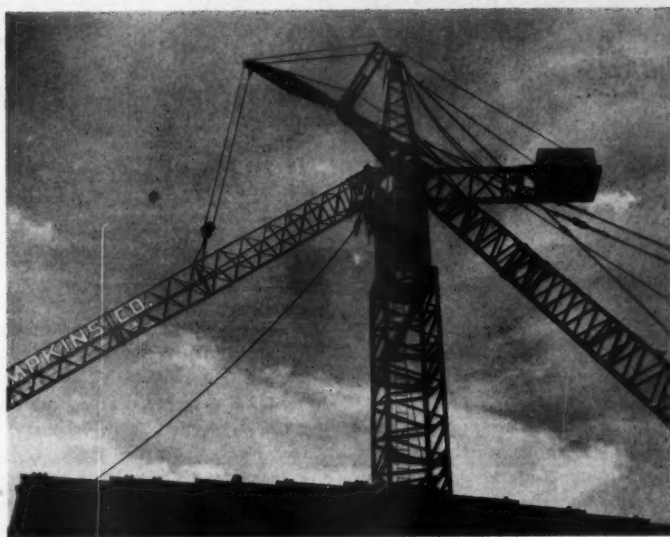
Charles H. Tompkins Co., Inc., a Washington contractor, bought the machine from Universal Mfg. Corp., Zellenople, Pa., U. S. distributors for the crane. Contractor officials say that though the rig is somewhat slower than conventional truck-crane or skip-type operations for reinforced-concrete construction, it completely eliminates the need for bug-

Erection of a Universal-Liebherr slewing crane for a 5-story addition to the Washington Post and Times-Herald plant is done by a Bay City crane. The slewing crane, distributed by Universal Mfg. Corp., Zellenople, Pa., is a small model with 78-foot tower and 88-foot boom.

gies, ramps, and a large crew of laborers, and is more than earning its \$35,000 purchase price.

The crane being used is a small model, operating from a fixed base in the center of the structure. The rig is operated from a 23-pound portable control box, which the operator can carry to the edge of the building to see the pickup. He can then walk to the point of placement to oversee the depositing of a load.

The building, which will not be completed for at least another year, is a 5-story addition to the present headquarters of the Washington Post and Times-Herald. It will house presses on its lower floor and have offices on the floors above. In all, it will add about 115,000 square feet of space to the newspaper's plant. The designer of the addition is Albert Kahn & Associated Architects, Detroit.

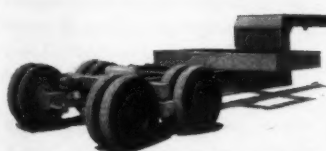


NEW MILLER "OTS" Tilt-Top

brings ONE MAN
DRIVE-ON loading to...
**BIG 22 Ton
Rigs**



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Capacity for**

Allis Chalmers	HD-16 crawler tractor
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Now, even for handling such big rigs as those listed above... ONE man can tilt, drive-on load... be on his way to the next job in just TWO minutes. All the speed, convenience and safety for which MILLER Tilt-Tops have gained wide acceptance are engineered into this big 44,000 lb. capacity, gooseneck Tilt-Top. Now, you can save the cost of slower loading, more cumbersome trailers... haul big rigs as well as small... with Tilt-Top speed and convenience.

A massive tilting platform 8 x 16 ft. — 20 ft. long if desired (plus a stationary section 4 1/2' x 8') tilts from a pivot near the rear wheels for lower platform height without over-the ridge "beaver tail" loading. Tandem dual wheels are suspended directly from the massive tongue—frame on "New-Way" spring beams... providing limited spring action. See this labor saving production booster at your MILLER distributor today!

*F.O.B. Milwaukee, Wis.
Complete with platform, tires, two pair of air or vacuum brakes, three hydraulic tilt cylinders, lights, reflectors and turn signals... tax included.

Miller
Tilt-Top Trailer Inc.

456-Y So. 92nd Street, Milwaukee 14, Wisconsin

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AUGUST, 1959

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49

Pipe pushed under highway—inexpensively

by HENRY GOLDFINGER, project engineer
Spencer, White & Prentiss, Inc., New York, N. Y.

Pushing a 102-foot steel pipe, 66 inches in diameter and $\frac{1}{2}$ inch thick, beneath a 6-lane parkway in New York City's Borough of Queens without mishap or settlement of the road was done recently with the inexpensive jacking method. Good design, plus an awareness of critical factors involved in the work, helped Spencer,

White & Prentiss, heavy-construction and foundation contractors, to handle the job. The pipe, acting as a cylinder for a 48-inch concrete water line, runs under the Shore Parkway, a feeder lane, and a mall at 89th Street.

Jacking a large-diameter pipe through a fill doesn't usually present special problems if its length is less

than 60 or 70 feet. If the pipe is longer, more expensive methods may be needed to cope with the field problems that may arise. For instance, it becomes more difficult to hold a large-diameter pipe to accurate line and grade as its length increases. Buckling of the pipe becomes another problem as the total jacking force

rises. Time of shutdown between jacking shifts must also be considered if an unnecessary increase of jacking pressures is to be avoided.

Although Spencer, White & Prentiss was prepared to sink a shaft at mid-point and jack from both ends, it wasn't necessary. Enough jacking force was made available so that the pipe could be pushed through without excessive deviation from its course. Moreover, the pipe was heavy enough to withstand buckling. Throughout the jacking operation, the pipe was held to a 1-inch line-and-grade tolerance without difficulty, and it cleared a 48-inch overhead sewer by 8 inches at the receiving end.

Jacking pressures

The soil under the highway is a coarse sand, underlaid by a fine sand, deposited by a hydraulic fill, at the jacking level. A resistance of 250 to 350 pounds per square foot to overcome friction through this material was anticipated. Except for the first 25 feet, these values checked out very closely in the field. Actual resistance varied between 250 and 500 pounds per square foot.

Jacking pressures and unit frictional resistance of the soil were high at the outset, but the unit frictional resistance decreased as the work progressed.

A 27x10-foot pit was dug on the north side of the road and sheeted with 3-inch boards for its entire 17-foot depth. One tier of 12-inch BP 53 wales was placed all around, 7 feet 6 inches below the surface. Water was encountered 9 feet down, and Griffin wellpoints were installed to keep the pit dry. Pumps were placed in an adjoining pit.

The principal tools used in the jacking operation were a pair of Watson-Stillman jacks with 44-inch strokes and a cradle made from a WF beam. Each of the jacks had a 200-ton capacity—and together they provided about twice the pressure finally needed. The cradle was made from a 13-foot length of 36-inch WF beam, placed with its flanges vertical. To facilitate sliding the steel pipe, lengths of 2½-inch-diameter slit pipe were placed on the two upper flanges. The beam was secured on 12x12-inch timbers.

Jacking and hand mucking operations were carried out simultaneously. The jacking force was applied along the horizontal center line of the pipe, 12 feet 6 inches below the surface, to two 15x60-inch steel plates. These were 1 inch thick, stiffened by 12-inch I-beams that distributed the force around most of the pipe's periphery. When the jacks completed a stroke, they were retracted, and short



Geared by FULLER...

Davison's rigs move more payload in less time

J. K. Davison & Bro., Pittsburgh, one of the largest ready-mix purveyors in western Pennsylvania, is supplying concrete for the Steel City's gigantic new civic-sports arena.

To increase the capacity of their ready-mix fleet, Davison recently purchased two high-payload Diamond T trucks with 8-yard mixers, 212 hp engines, Fuller Model 5-A-65 5-speed Transmissions and Eaton-Hendrick-

son Model 38DS Tandem Rear Axles.

Selected because of their proven reliability and ease of operation, the Fuller 5-A-65 Transmissions help provide the proper gear ratios for high maneuverability on congested job sites as well as added flexibility in city traffic.

Davison's new trucks feature four-axle construction, permitting GVW of 60,000 pounds. Because chassis

weight has been held to 16,000 pounds, high payloads are possible . . . and because the Fuller 5-A-65 Transmissions permit the operator to select proper gearing for every situation, Davison is able to hustle more ready-mix to the job in less time.

There is a Fuller Transmission designed to put more profit in your operation. For details, contact your truck or equipment dealer.

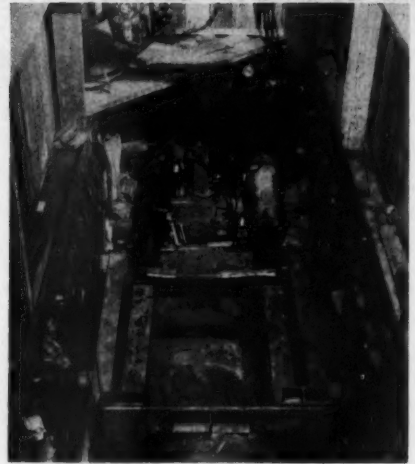
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For more facts, use Request Card at page 18 and circle No. 288

A section of concrete pipe is lowered into jacking position for a water line under the Shore Parkway in New York City. The job involved pushing a 66-inch-diameter steel pipe 102 feet under the parkway, a feeder lane, and a mall before installation of the concrete water pipe.

In the pit, Watson-Stillman 200-ton-capacity jacks with 44-inch strokes push against the 66-inch-diameter pipe. A cradle made from a length of WF beam is secured on 12x12-inch timbers.



lengths of I-beams were placed between them and the pipe to fill the space of the advance. Then the jacks were extended again. Five strokes pushed one 16-foot length of pipe into the ground. A new length was welded to the 1 foot of pipe that remained inside the shaft area.

A careful check of the jacking pressures was kept for each of the 16 shifts. Whenever necessary, the pipe's alignment was varied by reducing the pressure on one jack.

The jacking load for the first 25 feet of pipe reached 150 tons, and for the remaining 75 feet the loads varied between 150 and 230 tons. This was well within the 400-ton capacity furnished by the two jacks.

Shutdown effects

The time of the jacking shutdown had a marked effect on starting pressures and total force each time work was resumed. The greater the lapse of time between jacking operations, the greater was the starting force required.

On a 2-shift operation, starting pressures increased about 4 per cent, a negligible amount. When one shift was working, starting pressures increased about 28 per cent. After a weekend shutdown, the average increase was 41 per cent.

These percentages are based on a limited number of readings, but they indicate that this type of work should be carried out on a 2-shift basis, at least, to eliminate any appreciable increase in starting pressures. Under certain conditions, a 3-shift schedule may be desirable.

Water pipe installed

When the full length of the steel pipe had been installed, a 48-inch-ID reinforced-concrete water pipe was placed inside. This pipe was jacked into position in 16-foot lengths. A concrete cradle was first installed by the general contractor; then the steel interlining of the 48-inch concrete pipe was welded together at the joints as each 16-foot section was placed in the shaft. Two shop-assembled 30-ton jacks with 5-foot strokes were substituted for the original jacks to speed this operation.

Installation of the water pipe required a much larger jacking force than had been anticipated. Approximately the same force as the weight of the pipe—37 tons—was exerted be-

(Continued on next page)

For more facts, circle No. 289

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A pair of Simplex pumps, hooked up in series and using Texaco fluid, activates the jacks that drive the pipe.



(Continued from preceding page)

fore the entire length was pushed through to the opposite end. The coefficient of friction was slightly over 1.0.

Grouting

The third phase of the job required the concrete pipe inside the steel shell to be grouted. Bulkheads were built at the exposed ends of the steel pipe on each side of the road to close off the 4½-inch annular space between the concrete and steel pipes. A 10-foot-high, 1½-inch vent pipe was attached to each bulkhead to insure that no air was entrained in the annular space and to make sure that the space was completely filled. Grout was pumped into the 102-foot length through a 2-inch flush-joint AX pipe, which was supported within the steel pipe, at the top, by J-shaped hooks. As grouting proceeded, the 2-inch pipe was withdrawn.

It took 8 hours to fill the annular space between the two pipes with 28 cubic yards of 1:2 grout. Each batch consisted of 3 bags of cement, 6 cubic feet of sand, and 18 gallons of water. A Colcrete high-speed DD-8 colloidal grout mixer, working at 2,000 rpm, was used, and the grout was simultaneously mixed and pumped directly into the void at a pressure of 20 to 30 psi. The Colcrete mixer, with its high-speed high-shear mixing action, produced a grout of low water-cement ratio, but with a high enough fluidity so that it could be easily pumped. Because of the centrifugal pump action of the mixing elements, the mixer also served as a low-pressure pump, eliminating the need for separate pieces of pumping equipment.

Personnel

The jacking of the steel pipe was completed in less than three weeks by Spencer, White & Prentiss. Work in the field was carried on by a 10-man crew supervised by Vincent Leary, job superintendent, under the direction of Don McKinley, general superintendent, and Henry Goldfinger, project engineer. The general contractor, T & T Construction Co., Brooklyn, was represented by Vincent Saggese, project engineer. The owner, New York City's Department of Water Supply, Gas, and Electricity, was represented by Frank Nola, field engineer.

THE END

Rubber-asphalt surfacing test shows profitable results

Four Australian cities, plagued with fast cracking road surfaces, recently started on a campaign of rubber-asphalt surfacing to test the long-wearing effectiveness of the material. In the course of the layings, 12 surfaces were put down in 8 days.

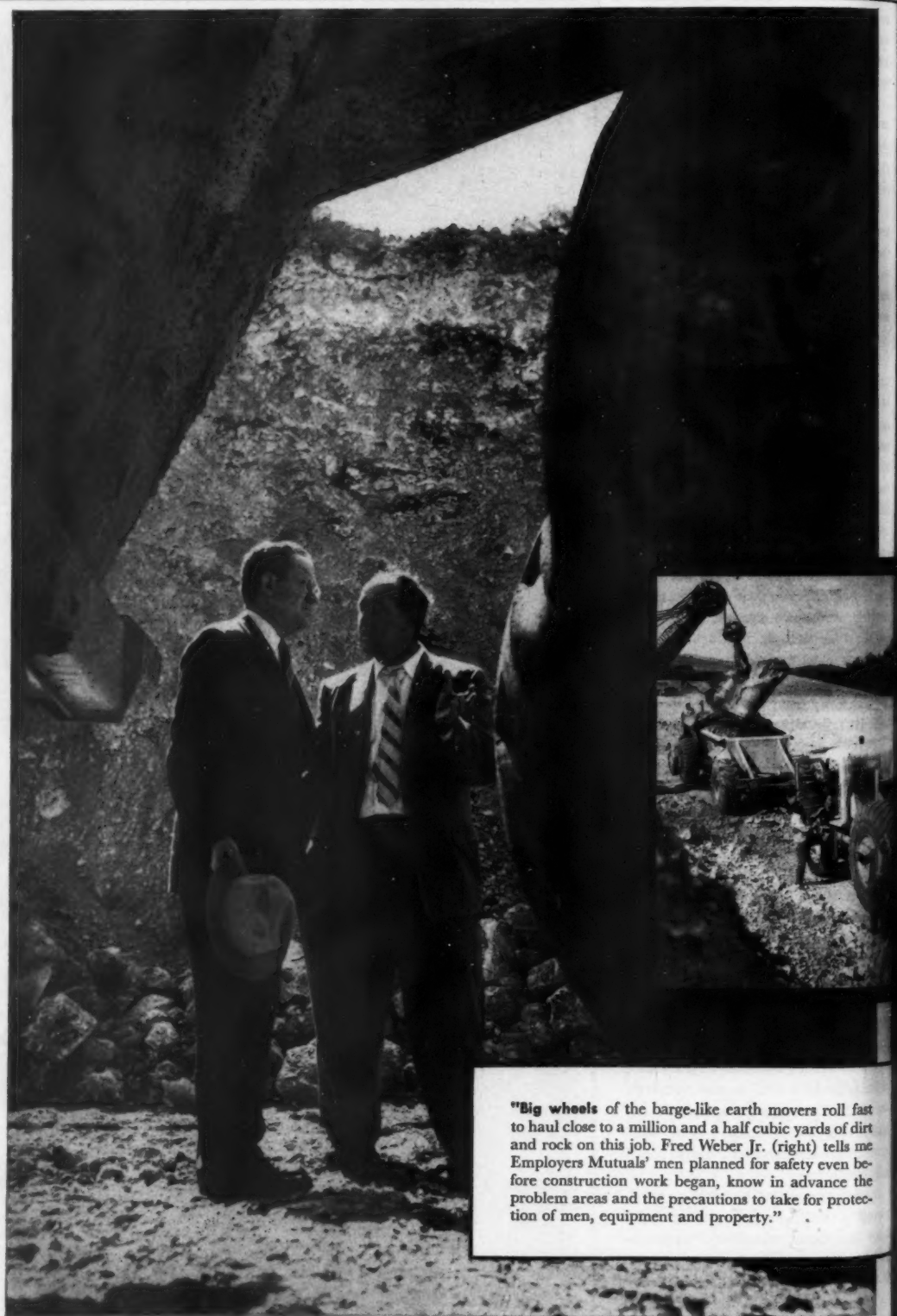
Engineers at Brisbane, Mackay, Ayr, and Cairns had different, but related, problems.

At Brisbane they wanted to find a binder which would seal road surfaces affected by structural failure. Mackay was looking for a surfacing material with exceptional adhesive qualities to reseal cracked and badly pitted surfaces. Ayr had cracked concrete surfaces; and Cairns was interested in a road with long-wearing life and

ability to withstand shear stresses.

All turned to a surfacing combination of rubber powder and asphalt. In Cairns it was noted that 50 per cent longer road life may be obtained for only 15 per cent additional cost. The most important feature of a rubber-asphalt binder is its ability to retain ductility for a longer period.

In the United States, rubber-road testing is being conducted with latex-asphalt road-surfacing combinations. Among areas in which rubber-asphalt surface dressings went down were Louisiana, West Virginia, South Dakota, and the District of Columbia. A number of other states are also planning similar paving projects.



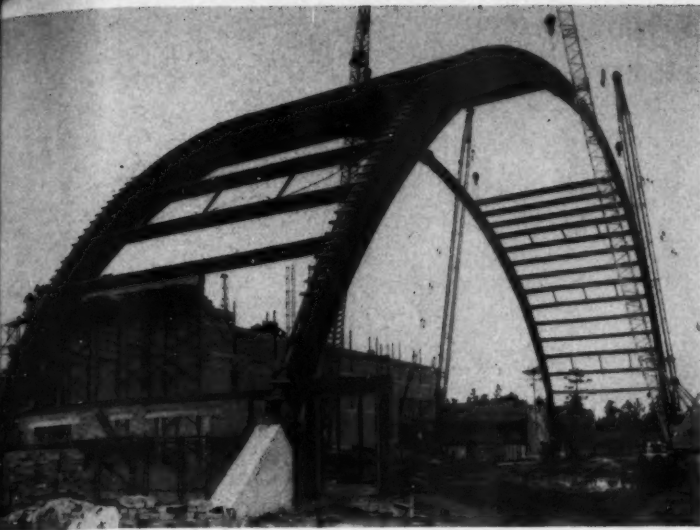
"Big wheels of the barge-like earth movers roll fast to haul close to a million and a half cubic yards of dirt and rock on this job. Fred Weber Jr. (right) tells me Employers Mutuals' men planned for safety even before construction work began, know in advance the problem areas and the precautions to take for protection of men, equipment and property."

"As part of the country's construction program, we know that to the maximum. "Recent west of St. Louis is being done by the Fred Weber Jr. Mr. Weber has discussed the construction of the Waukegan Ice offered by Waukegan, allowing the advance of this Pre-

"Table talk (second from Safety Eng. Weber and Before Web. Mutuals qu. A.

Empl

AUGUST,



Two of the five 252-foot timber arches for a jai alai arena at Daytona Beach, Fla., are positioned by four cranes. To provide a perfect fit, each half arch was preassembled and holes were drilled through the steel splice plates.

Clear-span timber arches set record in new arena

Construction of the Volusia jai alai arena in Daytona Beach, Fla., has established a new record for clear-span timber arches. The structure, which seats 3,500 spectators, has a 50,000-square-foot roof area supported by five arches spanning 252 feet and spaced 40 feet on centers.

Laminated wood purlins span between the arches, with 2-inch decking in random lengths applied over the purlins for the roof sheathing.

The glue-laminated timber arches measure 11 inches wide and vary in depth from 36 inches at the abutment to 66 inches near the quarter points, narrowing to 30 inches at the mid-span. The 3-hinged arches rise 67 feet 4 inches from the abutment to the center pin. Shipping limitations required the arches to be spliced near the quarter points; this speeded handling during fabrication and made it possible to use water-resistant casein glue in the two center sections.

Arch sections were assembled and pinned to the abutments with their center-pin connection resting on the ground. Purlins and bracing were installed between the first two arches, which were then rotated upward about the abutment pins and secured at the building center line. The three remaining arches were raised in a similar way. Four mobile cranes lifted the assembled sections, each crane handling a maximum load of 9 tons.

End-wall framing consisted of laminated timber columns and 4x10 solid sawn girts. The lengths of the front-wall columns range from 6 to 52 feet. They support no vertical loads other than the wall itself and are supported at the base by masonry and at the top by the roof shell. The longer lengths are also supported near mid-height by a reinforced-concrete balcony. The rear-wall columns support the vertical wall and roof loads, as well as the horizontal wind loads.

Oboler & Clark of Miami Beach was the structural engineer; Thomas & Slater, Inc., Daytona Beach, was the general contractor. American Fabricators, Inc., Bellingham, Wash., furnished the structural timber framing.

Wausau Story

ON THE ROAD AHEAD



by **LOUIS W. PRENTISS**
Major General U.S. Army (Ret.)
Executive Vice President
American Road Builders' Association
Washington, D.C.

"As part of the highway industry, you know that our country's roadbuilding program represents the biggest construction job the world has ever seen. And you also know that the problems the work poses are almost equal to the magnitude of the task.

"Recently I visited a roadbuilding project just southwest of St. Louis on Interstate Highway 44. The work is being done by the St. Louis County Bridge and Grading Company in joint venture with its parent company, Fred Weber, Contractor, Incorporated. In talking with Mr. Weber and his two sons, Fred Jr. and John, we discussed problems contractors face in this type of construction and the need for planning ahead.

"The Webers told me they were impressed with a service offered by their insurance carrier, Employers Mutuals of Wausau. Using blueprints and specifications, and following this up with a study of the actual site, they give advance quotations on insurance costs. The Webers say this Pre-Bid Service enables them to make a more accu-

rate appraisal of their costs. It also serves as a guide and check on the hazards likely to be encountered on the job.

"As the construction work goes on, Employers Mutuals men continually help maintain safe working conditions and procedures. That's good business. Safety pays not only in dollars and cents, but also in humanitarian benefits. 'Employers Mutuals men give us the kind of help we need,' says Mr. Weber.

"With this kind of safety-conscious planning, the Webers and other progressive contractors are keeping Interstate System costs down... giving the taxpayers the most road for the tax dollar. I'd say that makes Wausau men 'good people to do business with'."

As one of the leading insurers of construction projects in America, Employers Mutuals of Wausau recognizes its obligation in working with contractor-policyholders to make their jobs come out safely and profitably. Our safety engineers are backed by a staff of construction specialists. With 109 throughout the United States, personal service is never more than a few hours away. We write all forms of fire, group and casualty insurance (including automobile) and are one of the largest writers of workmen's compensation. Consult your telephone directory for your nearest Wausau Man or write us in Wausau, Wisconsin.



"Table talk sets the day's work. Jim Miller (second from left) is an Employers Mutuals' Safety Engineer, works closely with Fred Weber and his sons, Fred Jr. and John. Before Webers submitted bid, Employers Mutuals quoted insurance costs."

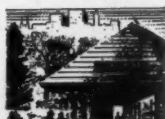


"Cross roads. During construction here, heavy equipment must often cross busy Highway 66. With Employers Mutuals' help, the Webers have set up one of the most effective safety-signal systems I've ever seen on a job."



"All clear, when rock is blasted means Employers Mutuals' men have already determined safe charges, have seen to it that all nearby property owners have been told what's happening and have suggested other hazard controls."

Another version of this Wausau Story for the public appears nationally in The Saturday Evening Post, Time, Newsweek, U.S. News and World Report and Business Week



Employers Mutuals of Wausau

"Good people to do
business with"

For more facts, use Request Card at page 18 and circle No. 290

HRB reports legal aspects of highway classification

Special Report 42, "Highway System Classification, A Legal Analysis, Part I," is available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

This bulletin concerns itself with primary highway systems and contains data on the objectives and nature of the system; a designation of primary highway system; additions to the primary highway system; changing the primary highway system; contracting the state primary highway system; and municipal extensions of primary highways. Three appendices give a state-by-state summary of law, as well as statutes and cases cited.

The report is priced at \$3.20.



A single-tooth ripper on a Cat D8 breaks up the sandstone so that it can be picked up by the scrapers. Material too hard to be ripped was blasted.

Ripping, blasting finish tough rock job

No matter how many test holes you drill, you never know what's under the ground until you start digging it up. And when you bid a rock and dirt job with cuts going down to 110 feet, you have to gamble.

On a grading contract for Interstate 94 in western Wisconsin, contractor Lawrence Gerke gambled and won.

After looking over the plans and

spec on the 2.1-mile contract, Gerke went out in his Jeep to have a look at the ground. It was hilly, heavily wooded country. He knew how much it would cost him to clear and grub the 120 acres of timber from the right-of-way. He had a fair idea of the cost of moving the 800,000 yards of dirt on the contract. The big question was how tough it would be to move the 500,000 yards of rock.

He knew that the limestone would have to be drilled, blasted, and loaded with a shovel. But there was also a lot of sandstone on the job. Nobody knew whether this had to be blasted or whether it could be ripped and loaded with scrapers. Falling back on past experience, Gerke took the chance that he could rip the material.

When Gerke submitted his bid, he had the price of the rock down low—48 cents a yard. He bid the dirt at 34 cents.

There weren't many other bidders on this section, because few wanted to gamble on what was 50 or 100 feet below the surface. For a while, Gerke, low bidder at \$715,270, didn't know whether to pat himself on the back or feel sorry for himself.

Scrapers tackle tough job

When scrapers got down to hard digging, Gerke's gamble paid off, for the sandstone could be broken by a single-tooth ripper mounted on the rear of a Cat D8 tractor. Material that was too hard to be ripped was blasted, then loaded by scrapers. Those portions deemed too hard to be dug with a 3/4-yard shovel were classified as rock in accordance with Wisconsin specifications.

The going was rugged for the small but powerful fleet of scrapers. In moving from the cut at the top of the hill to the fill in the valley, the operators continually had to fight the steep grades. They had to maneuver with care while spilling their loads along the edges of the 70 and 80-foot-high fills.

Driven by experienced operators, the powerful Euclid fleet of two T8-M twin-engine scrapers and two S-11 scrapers put out a good production record. For hauls of about 1,000 feet, the four scrapers carried about 400 loads per 10-hour shift. Scrapers were push-loaded by a Euclid TC-12 twin-engine tractor.

Big shovel handles rock

On Gerke's contract, there was still plenty of rock that could not be ripped and loaded with scrapers. The limestone had to be drilled, blasted, and loaded into end-dumps by a shovel.

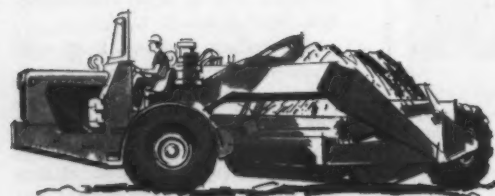
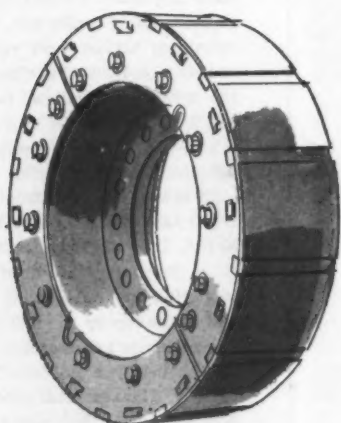
Gerke figured he needed a new shovel for the job, and he went out and bought one. Probably the biggest working on road construction in the state, it's a new Lima 1250SC 3-yard shovel powered by an Allis-Chalmers 300-hp diesel engine.

Gerke is pleased with the performance of the new rig. It put out 3,000 cubic yards of rock per 10-hour shift with very little downtime.

The 3-yard shovel loaded the blasted rock into three Euclid 22-end-dumps that made the haul of approximately 1,000 feet to the

B.F. Goodrich

Why the switch to B. F. Goodrich Hi-Torque Brakes?



Because they are the only brakes with the reserve power to handle those giant wheeled vehicles now in production and those still on the drawing boards! Full circle stopping power provides uniform lining pressure, resists fade. In fact, B. F. Goodrich Hi-Torque Brakes stop heavy equipment up to twice as fast as conventional two-shoe brakes. Operators work faster—with greater safety—even on terrain usually considered unsafe. Join the big switch now. Specify Hi-Torque for your heavy duty off-highway equipment. B. F. Goodrich Hi-Torque Brakes are available in sizes from 17 1/4" x 4" to 26" x 7". They require only one hydraulic connection—need no lubrication—and adjust themselves automatically. Get the whole story. Contact: B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Dept. CE-89, Troy, Ohio.

B.F. Goodrich Hi-Torque brakes

For more facts, use Request Card at page 18 and circle No. 291

Lowest-priced, most-advanced construction trucks you can get all from GMC Operation "High Gear"

Operation "High Gear" is the most ambitious engineering, design and quality-control program ever launched in the truck industry. It is paying off for you right now in new truck values and new performance . . . bigger payloads and increased truck life.

This isn't talk—it's action. Look at these four pages and see for yourself.

SAVE MONEY WHEN YOU BUY A

GMC TRUCK!

Examples, the bright red 450 model with tandem axle costs up to several hundred dollars less to buy than other models in the 35,000 lb. GVW class! No other pickups compare with the Extra Value features and low list price of the orange Fleet Option. This true-truck-value is throughout the entire GMC Truck line.

SAVE WHILE YOU OWN A GMC TRUCK!

The DW970, painted green, with trailerized dump and the yellow D860 bulk cement hauler are proof of the above statement. Here's why: Both are powered by the famous 571SE diesel engine that costs the least to own—proved by actual detailed owner records. More owner savings—when you need parts and service, you get everything you need, promptly, at your GMC Dealer. There's no need to go several places and lose valuable time. And remember, one warranty covers every GMC Truck, both chassis and engine.

There are many, many more reasons why GMC Trucks are your best investment, and your GMC Dealer will gladly tell you all. When you contact him, ask about the interesting on-the-job demonstration plan. Also mention that you have been assured of immediate delivery on most models.

GMC Truck & Coach . . . a General Motors Division







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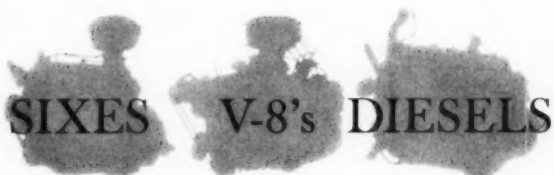
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GMC OFFERS BIGGEST CHOICE OF COMPONENTS!

There is never any need to "overrate" or "underrate" any GMC Truck or component, regardless of the hauling job. With the availability of hundreds of options, you are always sure to get the one truck with the ideal balance of power, capacity and ratio to keep running costs lowest and profits highest.

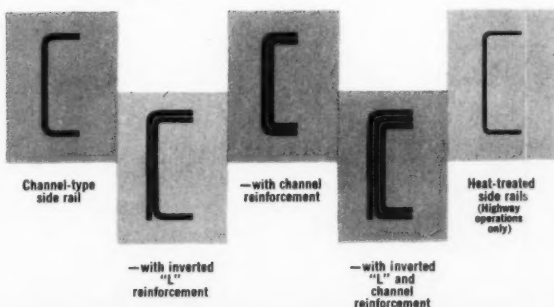
All GMC engines are famous for developing* full usable horsepower and torque at low, practical engine speeds . . . well known for their exclusive fuel-saving characteristics. You get proved, dependable life. You get plenty of load-moving ability for every construction job without surplus power that increases ownership costs.



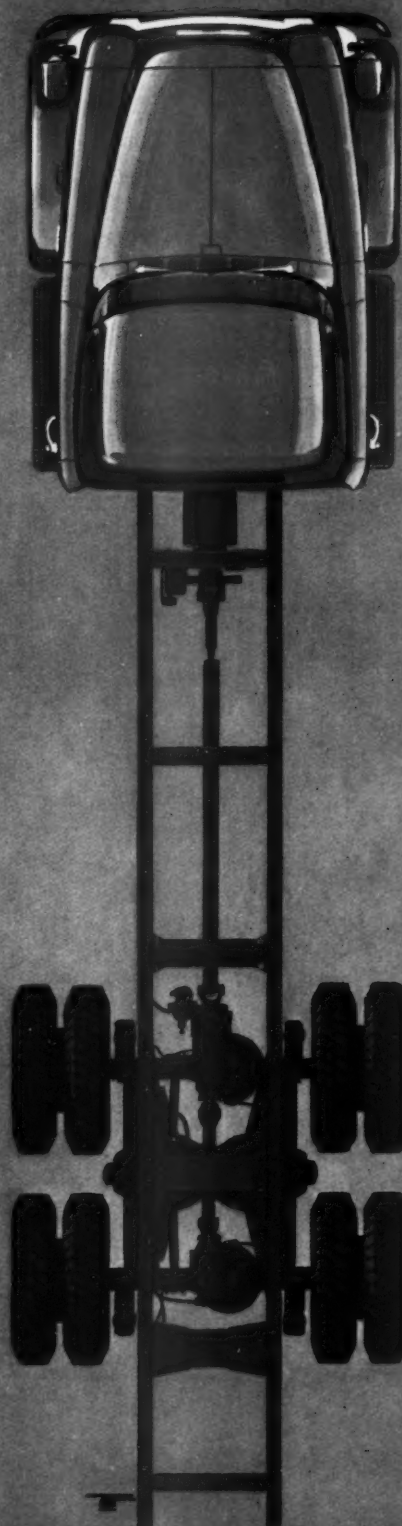
SIXES V-8's DIESELS

130 hp.	200 hp.	152 hp.
140 hp.	232 hp.	189 hp.
160 hp.		210 hp.
217 hp.		

Five basic types of factory-installed frames are offered by GMC. You get extra years of trouble-free service because there is a size and type with adequate strength to support every load on any construction job . . . maintain proper alignment of chassis and body components.



GMC's "Power-Mated" drive-lines eliminate the costly penalties of mismatched transmissions and axles. From the hundreds of combinations, it is easy to get the desired shift pattern and final drive ratios to meet every load condition, gradeability and road-speed requirements . . . efficiently and dependably.



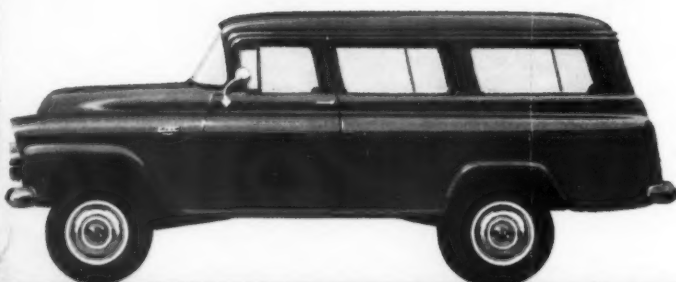
GMC BUILDS BIGGEST CHOICE OF CHASSIS

From the smallest job to the biggest project, there is a GMC Truck with the ideal load capacity and proper moving ability to save operating costs and keep work on schedule. You never have to compromise with a GMC, because no one builds a more complete line of models. Below are just a few examples.



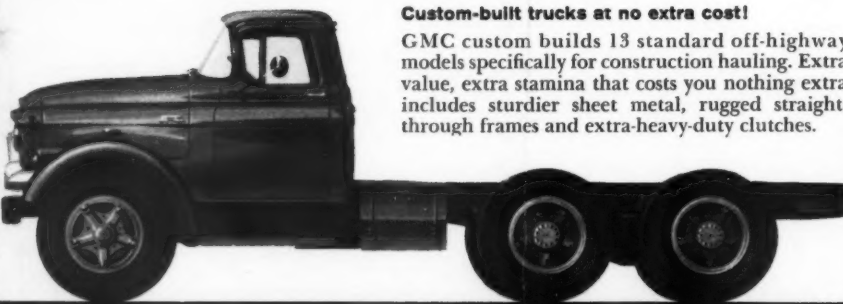
Haul up to 16% more ready-mix every trip!

The big load capacity of the Series FW550 six-wheel means 24 less trips on 1,000 cubic yard jobs! Equipment includes lightweight heat-treated frame, engine-driven front PTO, aluminum wheels, aluminum saddles and walking beams. Less depreciation and lowest operating costs make this GMC the profitable investment for contractors everywhere.



Make your own roads!

GMC's 4x4 Suburban takes soft sand, sticky mud and deep snow right in stride! Carries 8 men up 60% grades! Available with thrifty, fuel-saving Six or mighty V-8.

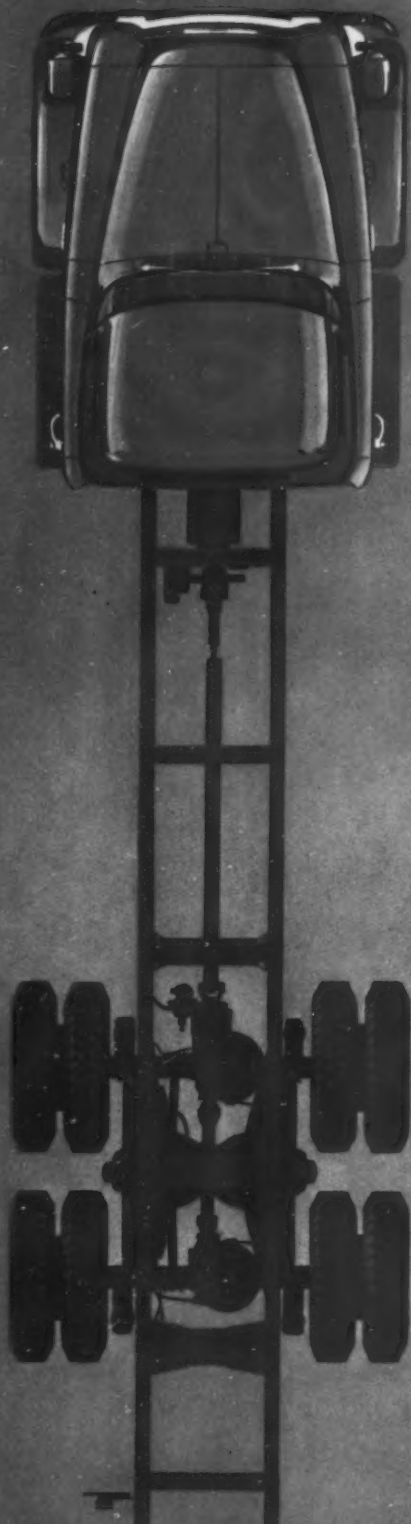


Custom-built trucks at no extra cost!

GMC custom builds 13 standard off-highway models specifically for construction hauling. Extra value, extra stamina that costs you nothing extra includes sturdier sheet metal, rugged straight-through frames and extra-heavy-duty clutches.



From 1/2-ton to 45-ton—General Motors leads the way



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Scrapers made good time in hauling from cuts to fills. These Euclids—part of a 4-scraper fleet—hailed about 400 loads per 10-hour shift.



A Lima 1250SC shovel, powered by an Allis-Chalmers 300-hp diesel, loads blasted rock into a Euclid 22-ton end-dump for the haul to the fill area. Background, a Gardner-Denver Air Trac puts down the 3½-inch blast holes.

Rigs on grading job

- Lima 1250SC 3-yard shovel
- Northwest ¾-yard crane
- 3 Euclid 22-ton end-dumps
- 1 Gardner-Denver Air Trac, using 3½-inch Timken steel carbide bits
- 1 Gardner-Denver 600-cfm compressor
- 3 Euclid S-18 scrapers
- 2 Euclid TS-24 scrapers
- 1 Euclid TD-24 and Cat 80 scraper
- 1 Euclid TC-12 push-dozer
- 1 Cat D8 with hydraulic ripper
- 2 Cat D8's with dozers
- 1 Cat D7 with dozer
- 1 Allis-Chalmers H-15 dozer
- 1 Allis-Chalmers HD-16 dozer
- 1 Cat No. 12 grader
- 1 Huber-Warco grader
- 1 American sheepfoot roller
- 1 Ferguson sheepfoot roller
- 1 Michigan 75A front-end loader

area. The oversize rock was broken up on the fill by a 3,000-pound drop hammer handled by a ¾-yard crane. A Cat D7 dozer spread the fill.

The 3½-inch blast holes were put down by a Gardner-Denver Air Trac powered by a 600-cfm compressor. The holes, drilled 10 to 30 feet deep, were loaded with a small percentage of Atlas 60 per cent dynamite and a heavy percentage of ammonium nitrate. The ammonium nitrate was mixed with fuel oil for more explosive power.

Right now, most of the grading and structures along the 40-mile length of Interstate 94 are completed, and concrete paving is being done. By early 1960, traffic is expected to be rolling over the section, which runs from Menomonie to Hudson, and is the western end of the proposed route that will link Madison and St. Paul.

The road will consist of two 24-foot lanes of 9-inch reinforced concrete separated by a median strip at least 50 feet wide. The concrete will be well supported by 6 inches of crushed stone on a 9-inch granular base.

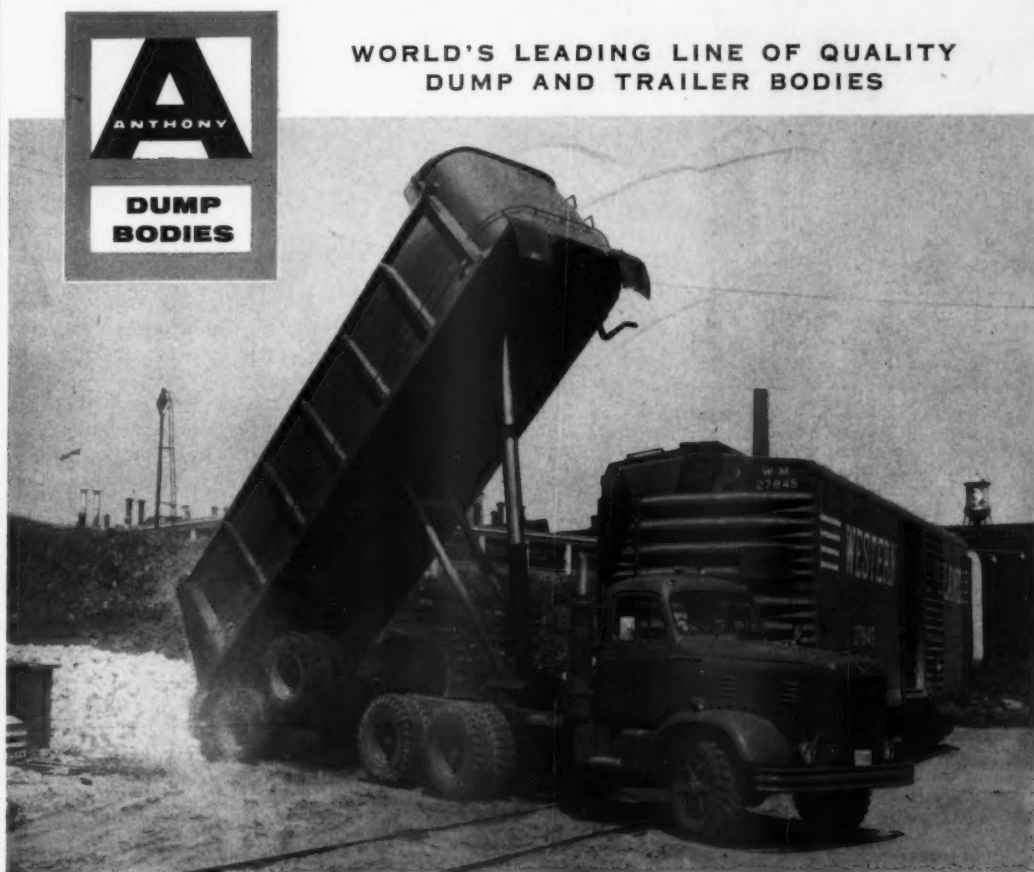
Personnel

For the Wisconsin State Highway Commission, E. R. Holm is district engineer and R. N. Morris, district construction engineer. The work between Menomonie and Hudson is under the direct supervision of George Leiser. On Gerke's contract, Robert P. Le Gore was resident engineer.

Lawrence Gerke, owner of the company, was general superintendent. Paul Potts was earthmoving foreman. Darrel Whalen was in charge of the shovel operation.

THE END

WORLD'S LEADING LINE OF QUALITY DUMP AND TRAILER BODIES



Extra legal payload with Anthony Frameless Dump Trailers!

Here's your answer to moving more material faster and at lower cost! Anthony's Frameless Dump Trucks eliminate conventional trailer frame. Exclusive high-speed Teleramic Hoist weighs less than conventional lifts—weight is better distributed. Low initial cost—low trailer weight—up to 4,000 lb. more legal payload than conventional tandem axle dump truck. No heavy

cables, winches or lift arms. Built to Anthony's highest-of-all quality standards. Two and four wheel dump trailers available. Capacities from 8 yds. up to any greater size required. See your Anthony distributor for the best size Anthony unit . . . engineered to your state transportation laws as well as your truck and hauling requirements. Anthony Company, Streator, Illinois.

Another example of Anthony leadership: World's largest honing machine, specially built for Anthony, produces highest quality precision cylinders.

ANTHONY



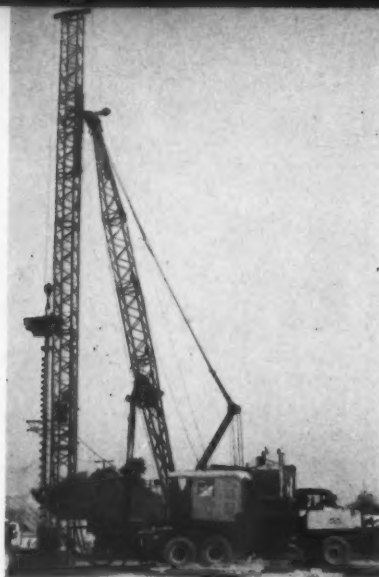
For more facts, use Request Card at page 18 and circle No. 293

Storm drain conduit is installed
far below busy city streets with

Unique shoring system for 58-foot trench

by RALPH MONSON, field editor

1 The basic rig is a Lorain 35-ton crane with 55-foot boom and a special set of 65-foot-long fixed leads. Riding the rails is a hydraulic-motor-powered turntable to rotate the auger-type drill. Auger sections are assembled in advance; drilling is continuous. A GM diesel engine and hydraulic pump at the rear of the crane, providing fluid under pressure for the motor, replaced the counterweight. Piles were spaced from 3.25 to 6 feet on centers, depending on trench depth and type of soil.



2 The 14-inch 74-pound H-piles, ranging from 35 to 65 feet in length, are delivered to the driving rig by a Ross straddle carrier. This carrier can pick up piles of the required length either from the storeyard or along the job and transport them over city streets to the point where they are to be driven.



3 Both driving rigs, 35-ton Lorains with 40-foot booms, have 65-foot fixed leads controlled by two telescoping tubular arms. They form an X as they reach ahead of the crane to the near corners of the leads. Hydraulic cylinders actuated the arms to position and turn leads so that piles had webs perpendicular to the trench center line.



4 Steam for the driving rigs is supplied by a Littleford Bros. Kwik-Steam generator, mounted on a heavy trailer with a 1,000-gallon water tank and 500-gallon tank for diesel fuel. Work was very mobile. Three similar spreads did work on conduit sections; another concentrated on special structures.

Working in heavily populated residential and business areas of Los Angeles, a joint-venture contractor built nearly four miles of large storm drain conduit in trench as deep as 58 feet below street grade. Vertical steel H-piles, with solid wood lagging between, supported the vertical walls of the trenches in which the monolithic box-type conduits were built.

The \$8,552,413 contract, awarded to a joint venture of Peter Kiewit Sons' Co., Arcadia, Calif., and Fred J. Early, Jr., Co., San Francisco, is known as the Slauson Avenue Relief Drain.

The crew of some 250 men was supervised by a staff headed by project manager Ward W. White and including assistant project manager Ray Gully, project engineer John McLaughlin, excavation and bracing superintendent Jim Kovack, form superintendent Tom Powell, concrete superintendent Clark Toye, and superintendent of special structures Bob Davick. The huge drain system was designed by the Daniel, Mann, Johnson & Mendenhall architectural and engineering firm, under the supervision of Lyall A. Pardee, Los Angeles City Engineer. Construction was directed by the Los Angeles County Flood Control District, with H. E. Hedger, chief engineer; G. V. Bittman, chief construction superintendent; and senior superintendent David Beakley. On the Kiewit-Early contract, Howard W. Baright served as project engineer, with Herman Berkowitz as senior inspector.

Included in the contract were several sizes and types of conduits at

varying depths, two short tunnels under railroads, ten special structures, and a large number of such structures as catch basins and sewer connections. In all, the four firms, plus mobile-drilling, driving and extracting crews, had 138 major rigs in use. Sixteen Motorola radios helped coordinate the work.

The principal contract items were the three types of box conduit. One of these items was 10,000 feet of double-barreled conduit, each barrel 11 feet wide and 14.6 feet high, with depth to invert ranging to 27 feet. The second item was 8,000 feet of single-box conduit, 14.5 feet wide and 19 feet high, ranging in depth from 46 to 57 feet. The third category includes 1,000 feet of 17-foot-square conduit with invert grades from 54 to 58 feet below street level.

Excavation of the deep trenches within the narrow confines of existing city streets was the big problem both in planning and construction. Just a few years ago, it was considered uneconomical to trench more than about 38 feet deep under such conditions. Deeper installations were placed by tunneling methods. Throughout the work, the contractor was well ahead of schedule, which allowed 900 calendar days for the job.

To facilitate the pile-driving operation, and to keep piles in alignment, the contractor first drilled 18-inch-diameter holes to elevations a few feet above invert grade. The work was done accurately and quickly by a highly specialized rig assembled by the contractor...



5 An Owen clamshell excavates after piles are driven. Dirt was cleaned out between pile flanges for insertion of 2x12 lagging, precut to fit the spacing between piles. Boards, inserted at the top, were slid down. A 1x6 vertical strip in the center of each panel held lagging for lowering as a unit.

CONTRACTORS AND ENGINEERS

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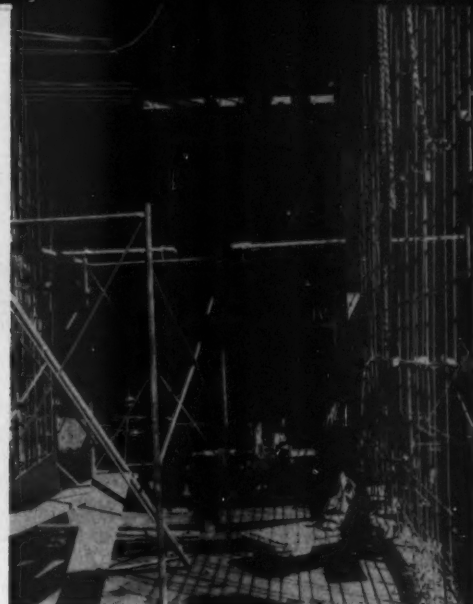
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6 A Cat D6 fine-grader. Wales are sections of H-piles, set flange to flange against vertical H-piles. Braces are H-sections or 12x12 timbers. A 100-ton jack held the shoring before the brace was installed.



7 A Michigan 125A tractor shovel dumps gravel into the trench in one of the areas where it was necessary to undercut and backfill because of wet or unstable conditions. Gravel was stockpiled along the street in advance. A D6 dozer spread and compacted the material.



8 Special collapsible steel forms that can be quickly set, stripped, moved ahead, and reset, were designed by the contractor for each type of conduit section. Invert sections were constructed first, reinforcing placed, and the barrel form advanced.



9 Ready-mix concrete, which was delivered by local suppliers, is discharged directly to inclined chutes in this shallow section of trench. In almost all cases, the transit mixers could pull up just beside the trench and swing their chutes out over the excavation.



10 In deep trenches, tremies are used to prevent segregation of the mix as it is dropped. After concrete had cured sufficiently, backfilling was done, existing utilities were replaced and the streets resurfaced.



11 Around special structures and utility lines, the dirt was hand-tamped with Barco rammers. Selected materials from the excavation were trucked back to the trench for use as backfill. The remainder was used in fill areas.



12 A Cat D6, pulling a pair of Bucyrus-Erie sheepfoot rollers, spreads material dumped by trucks and compacts it in one operation. Backfill was maintained on a slope, allowing trucks to back down.



13 One rig handled most of the pile removal—an American 50-ton Model 799 with an extractor powered by air. Extracted piles were delivered to driving rigs or to the storeyard.



14 Working with the extractor was a Case wheel tractor with Davis front-end shovel and Davis rear-mounted hydraulic hoe. It cleaned up and helped replace facilities disturbed by the work. THE END

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D ENGINE



**"I can place
5-ton rocks
on the jetty..."**

easy as a grocer puts cans on a shelf"

**PAYLOADER® is key machine
on unusual project**

When General Contractor P. W. Burge of Reno, Nevada agreed to construct a jetty and boat-launching ramp on famous Lake Tahoe *at cost*, his prime consideration was to select versatile equipment to do the job most economically.

His choice of a "PAYLOADER" tractor-shovel equipped with a Drott "4-in-1" bucket, and a dragline, proved to be a wise one. As his "PAYLOADER" operator, Cecil Cowart, puts it, "I just can't think of a job this tractor-shovel can't do. It is actually a better loader and dozer than single-purpose machines and the bucket can be used like a giant hand to grasp and lift material or any of the big riprap rock. I can place 5-ton rocks on the jetty easy as a grocer puts cans on a shelf."

More Than a Tractor-Shovel

If you invest in a "PAYLOADER" you get *more* than a tractor-shovel . . . you have a potential *fleet* of construction and maintenance equipment to handle, not only the regular tractor-shovel jobs, but scores of specialized jobs normally requiring single-purpose machines. This is because a "PAYLOADER" can be equipped with a greater variety of proven attachments than any other tractor-shovel, each tool specifically and exclusively engineered for the "PAYLOADER".

**Reduces Your Equipment
Investment**

With this one basic machine and its many attachments that does scores of different jobs, you eliminate the big investment in various single-purpose machines. A "PAYLOADER" will handle these specialized jobs equally well, and then can be quickly converted back into a shovel or to another useful attachment.

Four-in-One Bucket

A "PAYLOADER" equipped with a patented Drott 4-in-1 bucket has no end of uses because it can function as a shovel, bulldozer, clamshell or self-loading scraper. This special bucket is available only on a "PAYLOADER" in the rubber-tired field.

Other Useful Attachments

Some of the many other "PAYLOADER" attachments include: back-hoe, blacktop spreader, side-boom, vibratory compactor, crane hook, angling blade, fork lift, hydraulic grab.

Wide Range of Sizes

Proven "PAYLOADER" tractor-shovels are available in a wide range of sizes from 2,000 to 12,000 lb. carry capacity, and they are backed by the largest most experienced network of distributors in the industry.

THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Illinois

Send literature on the complete "PAYLOADER" line and attachments.

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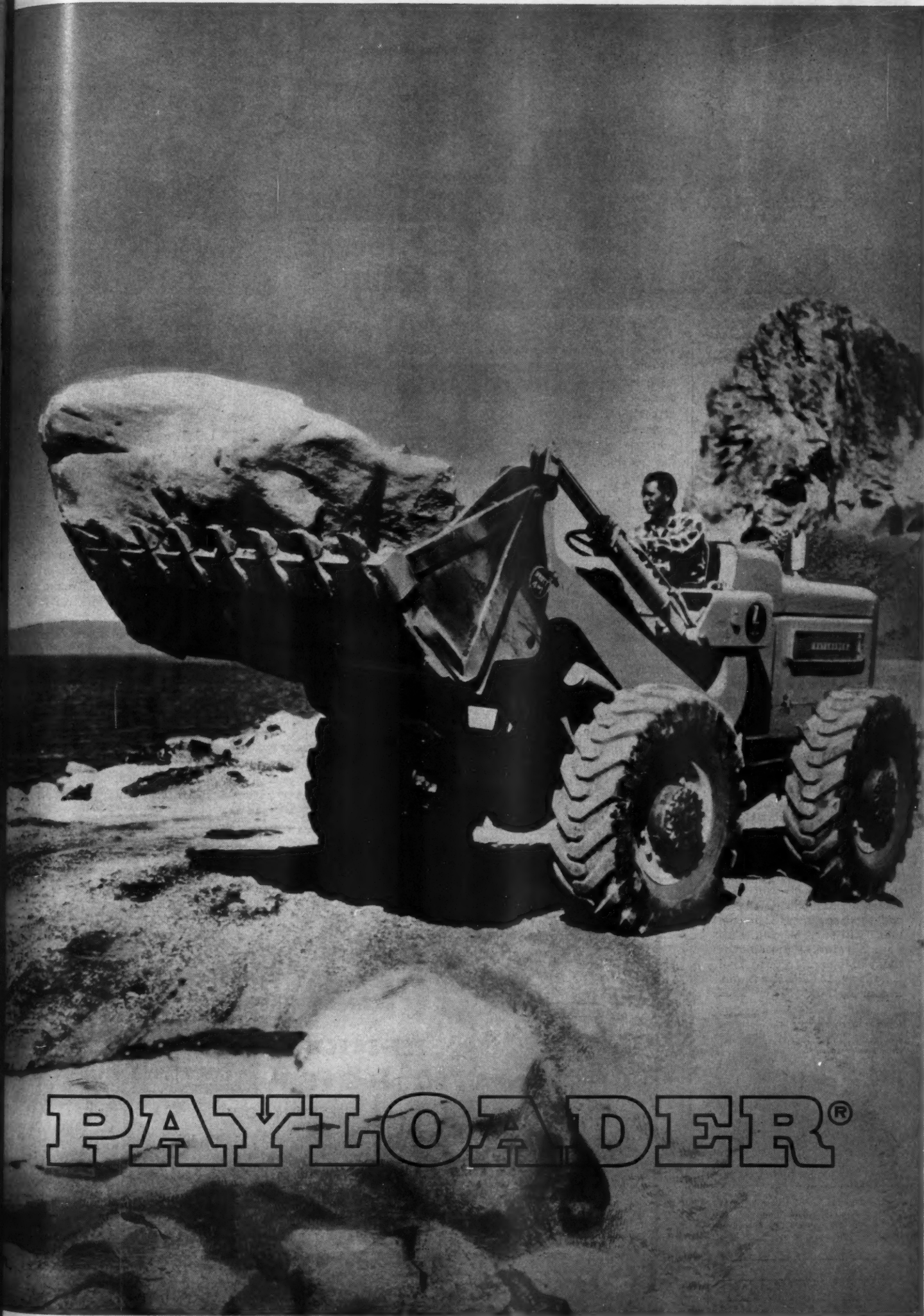
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THE FRANK G. HOUGH CO.
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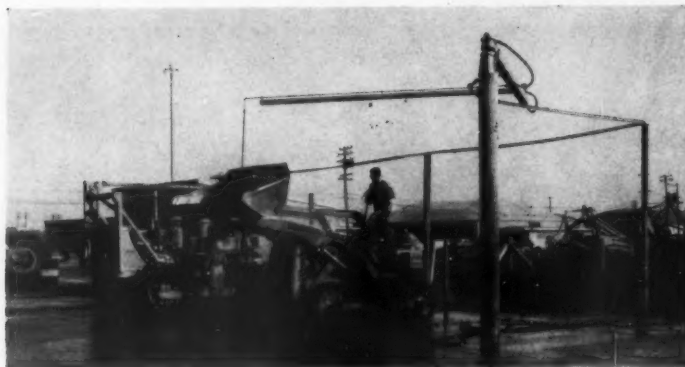
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PAYLOADER®

For more facts, use coupon or Request Card at page 18 and circle No. 294



One of Peterson Tractor Co. four Malsbary steam engines provides steam for an outdoor rack where all dirt is removed from the machines before they go into the shop. The movable overhead arm carries steam line.

Customers want special rigs?

Check Peterson Tractor's setup



MAGINNISS POWR-FACTORS patch asphalt faster!

Maginniss vibratory compactors speed placing and patching of blacktop . . . are easily moved from job to job . . . work fast, at speeds up to 50 ft. per minute. Water feed prevents asphalt adhesion . . . assures smooth finish.

Put Maginniss Powr-Factors to work on your blacktop jobs. The increased production, lower costs and small initial investment will surprise you. Call your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio.

AA-1921

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154 Distl Ave., Mansfield, Ohio
Yes, I want to know more about the Powr-Factor for asphalt work.

name _____
address _____
city _____ zone _____ state _____

For more facts, use coupon or circle No. 295

Service to the customer, the goal of all equipment distributors, has been expanded by Peterson Tractor Co., San Leandro, Calif., into the fields of equipment manufacture and the engineering of methods of construction. This well known West Coast Caterpillar dealer tackles any problems presented by a customer and comes up with some amazing results.

West Coast contractors are noted for doing big jobs in a big way. So it is not surprising that they want big equipment. While the Cat D9 was still a huge new giant to most of the industry, a contractor was asking Peterson's Special Purpose Engineering Department to figure out how to use two of the big tractors for tandem push-loading. The staff went to work and came up with equipment that not only provided the answer but established new standards for scraper production.

Now a production item of the Peterson shops, the D9 tandem pushing "package" includes special dozer frames and blades, cushioned rear push-blocks, and a modified Cater-

pillar 456 scraper. The inside-arm dozer blades, which are the same width as the D9 tracks, mount directly on the tractor frame. Four heavy-duty built-in rubber pads absorb the shock. The heavy rear push-blocks for the tractors enclose the cable control unit and are also fitted with the rubber shock absorber blocks.

With this pushing team, a large scraper was needed. Peterson's staff remodeled a Cat 456 scraper to get a struck capacity of 26 cubic yards and a heaped rating of 33 yards. The standard scraper was cut apart, lengthened, strengthened, and side-boarded.

This special "package" team, which is just one example of Peterson special services, has been setting production records for a number of Western contractors and has shown its ability to load and move material that would ordinarily require draglines.

Some of the other new or modified items that have been built to satisfy specific customer requirements are special rippers for D8 and D9 tractors,

a slope-trimming blade for bulldozers, special sheepsfoot rollers, a cable plow for laying underground cable and water wagons for DW15 and DW20 tractors.

Run by two brothers

The drive behind this progressive distributor organization stems from two brothers: G. Howard Peterson, president and founder of the firm, and R. A. "Buster" Peterson, executive vice president. Both men have a background of contracting and equipment manufacturing experience, much of which was gained through early affiliation with the R. G. LeTourneau Co.

In 1938, Howard Peterson left LeTourneau to set up Peterson Tractor & Equipment Co. in San Francisco. Headquarters were shifted to Hayward almost immediately, and then to the present San Leandro site in 1946. By this time, Buster had joined his brother in the distributing business.

The 5-county San Francisco Bay territory that the company first

This material hoist makes money for you!



TOW...



FLIP!...

Sasgen SELF-ERECTING LIFTAMATIC HOIST

GOES UP IN 2½ MINUTES—A ONE-MAN JOB!

This is the hoist that goes where you go, does what you want it to do—safely and dependably, built for heavy-duty service. Can be disassembled and shipped anywhere by common carrier.

Aluminum rails telescope, provide unloading heights from 13 to 40 feet. Has 7½ hp. gasoline engine and centrifugal-type governing downbrake (1000 lb. capacity) having 125 fpm. line speed. Remote control and adjustable limit stops standard. Side-loading platform is 34 x 60 inches to handle most loads. Also with reversible electric motor (500 lb. capacity). Write now for details—production is limited.

...IT'S BRACED,
READY
FOR WORK!



Sasgen DERRICK COMPANY
MANUFACTURERS OF EQUIPMENT FOR THE CONSTRUCTION INDUSTRY

3127 WEST GRAND AVE.
CHICAGO 22, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 296

CONTRACTORS AND ENGINEERS

Tractor Co.
team clean
or an out
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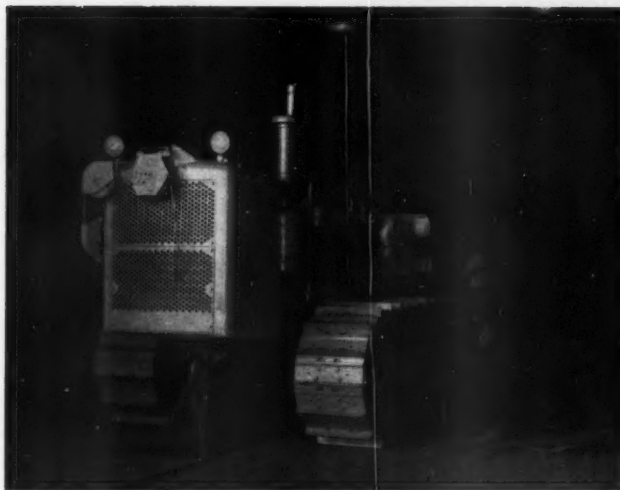
◀ In the engine shop, a workman removes valves from a tractor engine head with a special air-powered tool designed and built in the shop. The tool compresses the valve springs two at a time, simplifying and speeding up the job of tearing down and reassembling the engine.



In this part of the shop, workmen are remodeling a Caterpillar 456 scraper to make the Cat-Peterson 456P unit that has a capacity of 33 yards heaped. The standard scraper is cut apart, lengthened, strengthened, and sideboarded. ▶

erved is not a large area, but it contains important offices of several large construction firms that do work throughout the world. In serving these customers, Peterson's territory, in a sense, become world-wide. Last year, Peterson Tractor Co. was appointed Cat dealer for a territory in north central California, and branch stores were established in Chico and Redding. On a 53-acre site near Chico, a complete new facility has been constructed with 30,000 square feet of space under roof. The Chico store has its own 2,500-foot airstrip to accommodate the company's two Beechcraft planes as well as customers' aircraft. The Redding store is presently operating in rented quarters, but a completely new plant is planned for construction there within two or three years.

Transportation for company executives as well as sales and service personnel is speeded by the Beechcraft Bonanza and Twin Bonanza planes that frequently visit customers' (Continued on next page)



When the overhaul is completed, a D8 gets a new coat of paint. Huge fans draw air into the room and through the water curtain at the rear to control excess spray. The tractor is chained down in the pit, and the tracks are kept moving while the underside is painted.

"SO WE
LUBRICATE IT
WITH
LUBRIPLATE"



says: BAUER-SMITH DREDGING CO.
of Port Lavaca, Texas

"We cannot afford to take chances on the lubrication of the gears that drive the cutterhead of our dredge 'SHARY' so we use LUBRIPLATE No. 4 in the gear case. This husky unit operates semi-submerged. It is the biggest gear drive ever built by LUFKIN. We also use LUBRIPLATE No. 630AA exclusively for general greasing aboard the dredge."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



For more facts, circle No. 298

For SAFER wire rope fastenings...

GENUINE

CROSBY WIRE ROPE CLIPS

Red-U-Bolt* for instant recognition

- Drop forged base
- Base grooved to fit rope
- Hot-dip galvanized... resists rust and corrosion
- Standard heavy hex nuts



Write for free specifications catalog listing the most complete line of drop forged fittings for wire rope and chain.

*Trademark

BE SURE TO SPECIFY
The Genuine CROSBY CLIP

Stocked by leading distributors everywhere.

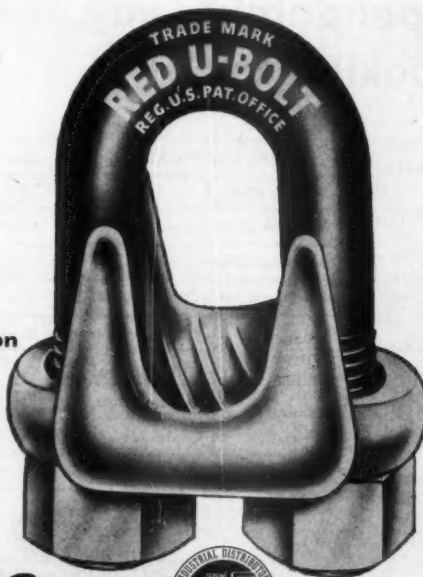
CROSBY-LAUGHLIN Division

AMERICAN HOIST & DERRICK COMPANY
FT. WAYNE, INDIANA

• Proved in 75 years of service • The Standard of the industry

• The only clip line in size range from 1/8" thru 3"

For more facts, use Request Card at page 18 and circle No. 297



AVE.
NOIS



A Kardex system with some 30,000 cards controls the \$1.5 million parts stock. The electric-powered chairs used by the two girls were designed and built in the Peterson shops to carry them back and forth in front of the files at the touch of a foot pedal. The vacuum-tube system, right, provides quick movement of orders and other papers from one part of the plant to another.

(Continued from preceding page)

job sites and make trips between the branch stores. Communication between the branches and with customers is handled largely by teletype. A private-line teletype system joins the three stores.

Expand main plant

The 20-acre site at San Leandro houses one of the most complete distributor setups in the country. The original plant, built in 1946, consisted of two main buildings: a 40,000-square-foot shop and service building and a 50,000-square-foot structure for parts, equipment display, and offices. Outlying buildings house steam-cleaning, sandblasting, and painting facilities.

In 1955-56 the service-shop area was almost doubled by the construction of a 36,000-square-foot addition. In 1957, another 16,000 square feet of floor space was added for a complete track rebuilding unit and enlarged parts-storage space. The used-equipment storage and display yard is paved with concrete.

The large service and repair shop leads to a great deal of specialization. When machines are being overhauled, they are stripped down, and the engines are removed and sent to the engine shop. Here, generators, fuel-injection systems, turbochargers, and certain other units are removed and sent along to the precision shop. When the engine has been completely overhauled and reassembled, it is broken in and tested on a Clayton dynamometer. This machine can absorb the full power output of engines as large as the D9. It gives assurance that the engine is running properly and developing full horsepower before it is replaced in the tractor.

Mechanics in the shop specialize still further—some work only on the older models, while others specialize in the late models.

When tractors are being renewed in this shop, they are first stripped down to the frame. Each part is then checked as the machine is rebuilt. Worn or damaged part are replaced or rebuilt to rigid standards. These machines leave the Peterson shop with a 90-day guarantee.

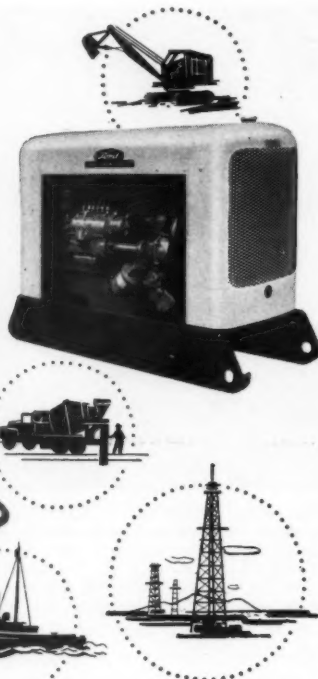
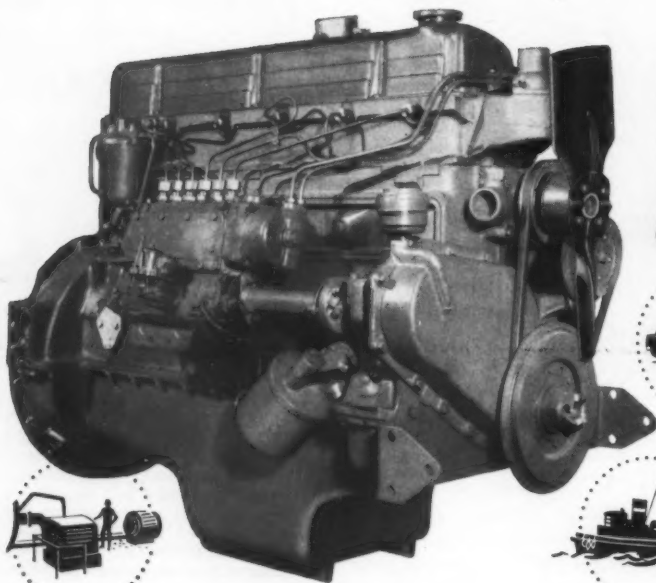
Modify machines

In another section of the shop, skilled workmen take new or used equipment and modify it to meet specific customer needs. In a nearby section, other workmen build up the special equipment that is designed and manufactured in the plant.

This special-equipment work is carefully planned and engineered before it gets into the shop. When a customer presents a problem to the Special Purpose Engineering Department, it is studied thoroughly. If standard equipment and methods will provide the answer, the customer is so advised. If a special method will solve the problem, the procedure is carefully mapped out and presented to the client. If modified or special equipment is indicated, this information is given to the customer, together with an estimate of the cost of the equipment and a study of the economy of its use.

To provide the best possible parts service to its customers, Peterson Tractor Co. carries a stock of replacement parts valued at \$1.5 million. A large area of the San Leandro plant is utilized for the storage and handling of this huge parts stock. Controls for the parts inventory are maintained by a Kardex system containing 30,000 cards. The three girls who keep up the system ride on electric-powered chairs that carry them back and forth along the line of card files at the touch of a foot pedal. The comfortable and speedy chairs were designed and built in Peterson shops. A complete track overhaul shop

Whatever your application:



Modern **FORD DIESELS** are designed to give you the dependability you need...the economy you're looking for!

If your job demands dependable, economical power day after day, consider a Ford 220- or 330-Diesel installation.

Simple in design and modern throughout, both Diesels offer heavy-duty 12-volt ignition systems for fast all-weather starting . . . overhead-valve construction for higher engine compression, more power . . . and four-way fuel injectors for efficient combustion, greater operating economy.

Quality-built by the most modern production methods, these Diesels are also low in initial cost. And because prompt Ford service is available almost everywhere, Ford Diesel users can count on a minimum amount of downtime.

For these reasons and more, a Ford Diesel can cut your operating costs . . . handle a greater work load. Therefore, specify Ford Diesels for original installation or for engine replacements. Write for details today.

ENGINE SPECIFICATIONS		220	330
Basic Model		X	Y
Number of Cylinders		Four	Six
Bore and Stroke—Inches		3.94 x 4.52	3.90 x 4.52
Displacement—Cubic Inches		220	330
Brake Horsepower	Dynamometer	60 @ 2250	96 @ 2250
	Continuous	48 @ 2250	77 @ 2250
Torque	Dynamometer	151#' @ 1600	236#' @ 1600
	Continuous	121#' @ 1600	189#' @ 1600
Compression Ratio		16 to 1	16 to 1



INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY
P. O. Box 598, Dearborn, Michigan

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

For more facts, use Request Card at page 18 and circle No. 299

renews track rollers and other track parts to factory new-part standards. Rollers, idlers, and sprockets are built up on special welding machines and then machined to factory standards at considerable savings.

For many of the commonly needed parts assemblies, Peterson maintains an exchange plan. The customer brings his used part into the shop and takes out a reconditioned replacement immediately. This gets his machine back in service and reduces downtime. The shop then thoroughly reconditions the part brought in by the customer, who is charged only for that service.

Other shop facilities

Among the many other facilities in the big shops are four Malsbary steam cleaners for cleaning equipment and parts before and during overhauls; a huge sandblast room big enough to take two D9's at once or a complete DW20 scraper unit; and a paint shop, big enough to take the largest piece of equipment, with a big fan and water curtain to prevent the escape of excess paint spray.

New equipment is displayed indoors in a large, well lighted display room at the front of the store. Well chosen decorations and lifelike mannequins add to the attractiveness of this unit of the plant.

Included in the office wing of the plant is a theaterlike conference room equipped with projection equipment, screen, blackboard, etc. It seats 60 people and is used for meetings of the various company departments, presentations to customers, training classes, and even by community organizations.

In addition to the Peterson brothers, the executive staff includes vice president C. R. Hitchcock and general sales manager Frank Castellucci.

THE END

Worthington appoints

Lewis & Coulter, Inc., 1225 Washington Blvd., Pittsburgh, has been named a distributor by Worthington Corp., Harrison, N. J. The dealer will carry mixers, pavers, tunnel agitators, and aggregate reclaimers in parts of Pennsylvania, West Virginia, and Maryland.

Parker-Hannifin dealers

Krico Engineering Co., 12990 Eaton, Detroit, has been named a distributor of re-usable Hoze-lok fittings, hose, and hose assembly tools produced by Parker-Hannifin Corp., Cleveland.

Fluid Control, Division of Petroleum Engineering Service, 632 Atando Ave., Charlotte, N. C., will handle Parker industrial tube and hose fittings and hydraulic accumulators.

Baker Engineering & Equipment Co., 700 W. Douglas, Wichita, Kans., has been named a franchised distributor of Parker industrial hydraulic accumulators. This dealer also maintains a branch at 3323 Summit St., Kansas City, Mo.

Aero-Land Supply Co., Building 630, Oakland Airport, Oakland, Calif., will carry Parker tube-working tools.

AED round table studies equipment sales, service

Better methods of selling and servicing construction machinery was the theme of a one-day meeting of 25 leading manufacturers and distributors who are members of the Industry Round Table, a major committee of the Associated Equipment Distributors.

High on the conference agenda were discussions of marketing, sales procedures, and 10 key questions on

distributor-manufacturer cooperation for improvement in service to users of construction machinery. The questions considered dealt with subjects suggested by distributors throughout the United States and Canada.

Buffalo-Springfield adds new dealers

Allied Construction Equipment Co., 4015 Forest Park Ave., St. Louis, has been appointed a distributor in eastern Missouri and southern Illinois for



Buffalo-Springfield Roller Co., a division of Koehring Co., Springfield, Ohio. The dealer will handle the company's complete line of equipment.

Parker-Danner Co., 25 Factory St., Hyde Park, Mass., will cover Maine, New Hampshire, Vermont, Rhode Island, and the area east of and includ-



Lima 1250 3½-yd. Shovel nears end of million-and-a-quarter-yd. excavating job on highway reconstruction project near Knapp, Wis.

"LIMA 1250 moves half million yards of rock—at 270-300 yards hourly!"

says Lawrence Gerke, Wisconsin contractor

The job was tough, the schedule tight. "In only 2 miles," says contractor Lawrence Gerke, of Merrill, Wis., "we had to excavate a million and a quarter yd. . . almost half of it rock!"

High performance, low maintenance

The project involved reconstruction on U. S. Interstate 94 near Knapp, Wis. Gerke needed a high performance machine with low maintenance requirements. He says, ". . . After considerable analysis of equipment, we purchased a Lima Type 1250 for rock excavating. In many cases no

blasting was done. Yet, working in this material, the Lima constantly averaged 270 to 300 yd. per hour. When shovel work was completed, the 1250 was easily converted in the field to a dragline."

The crawler-mounted Type 1250 has turned in outstanding performances everywhere as a 3½-yd. shovel, 85-ton crane, and variable dragline.

Air-controlled precision

Main operating and auxiliary functions are air-controlled for smooth, precision performance at full capacity operation. Choice of diesel engine or electric motor with torque converter.

Other features and available equipment include: Independent propel, extra-high-speed hoist attachment, third drum, power reversing hoist drum, two types of rigid and folding gantries. The 1250 can be knocked down to units of less than 60,000 lb. for haulage.

Whatever your job, there's a Lima type and size exactly right—½ to 6-cu. yd. shovels, cranes to 110 tons, draglines variable. Learn now why so many contractors agree with Lawrence Gerke when he says, "We are completely satisfied with the operation of our Lima." See your nearby Lima distributor or write to us.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

For more facts, use Request Card at page 18 and circle No. 300



5932

distributor doings

ing Worcester County in Massachusetts for Buffalo-Springfield.

W. I. Clark Co., 2195 Dixwell Ave., Hamden, Conn., will serve that state and three Massachusetts counties.

Southern Equipment & Tractor Co., Monroe, La., has recently added the southern portion of the state to its territory.

Clark names distributor; makes three changes

Smith Booth Usher Co., P. O. Box 3578 Terminal Annex, Los Angeles, has been appointed to sell and service the Michigan line of construction machinery manufactured by the Construction Machinery Division, Clark Equipment Co., Benton Harbor, Mich. The dealer will cover eight California counties and that part of San Bernardino County south of and including U. S. 66. A branch office is located at 3644 Main St., San Diego.

Eddy Equipment Co., Buffalo, N. Y., has opened a branch office at 1169 Mt. Read Blvd., Rochester, N. Y.

Blackwood Hodge Western Ltd., Edmonton, Alberta, Canada, has moved to 11224 142nd St., Edmonton.

G. H. Godsall Equipment Ltd., 435 Keating St., Toronto, Ont., Canada, will now handle Michigan equipment in Algoma, Sudbury, and Manitoulin Island, Province of Ontario.

Universal Form names

Missouri Construction Machinery Co., 8861 Ladue Road, St. Louis, has been named an exclusive distributor for Universal Form Clamp Co., Chicago. The dealer will handle Universal's concrete forms, etc., in southern Illinois and St. Louis.

Other distributors named by Universal Form are: Hatten Machinery Co., Seattle, Wash.; Hall-Perry Machinery Co., Billings, Mont.; Alamo Iron Works, San Antonio, Texas; and Fletcher Equipment & Supplies Inc., New Orleans.

Koehring Division news

The Koehring Division, Koehring Co., Milwaukee, has appointed Wood Tractor Co., 5241 N. E. 82nd Ave., Portland, Ore., to handle its excavators, cranes, pavers, longitudinal finishers, Mud-Jacks for roadbed stabilization, and Dumpsters for off-the-road hauling. The dealer will cover most of the northern half of Oregon, and five southern Washington counties.

Curtiss-Wright division appoints distributor

Korte Bros., Inc., 335 Murray St., Fort Wayne, Ind., has been appointed a distributor for the complete line of construction machinery produced by the South Bend Division, Curtiss-Wright Corp., South Bend, Ind. Most of the state will be covered by the dealer, which also maintains a branch at 23134 Lincolnway W., South Bend.

B-E adds distributor

Truck & Tractor Equipment, Ltd., Dixie (Toronto), Ont., Canada has been appointed a distributor for Bucyrus-Erie Co., South Milwaukee, and Bucyrus-Erie Co. of Canada, Ltd., Guelph, Ont. With offices at 2539 Dixie Road at Dundas St. W., the dealer will cover southern and northeastern Ontario.

Yale & Towne division appoints representatives

El Paso Flournoy Co., Inc., 1224 E. Missouri St., El Paso, Texas, has been appointed a franchised repre-

sentative for the Yale Materials Handling Division, The Yale & Towne Mfg. Co., Philadelphia. The dealer will cover west Texas and southeast New Mexico.

Masterson's Equipment, Inc., 1452 Elliott Ave. W., Seattle, will carry Yale industrial lift trucks and tractor shovels in western and central Washington. The dealer has a branch at 1711 Center St., Tacoma.

Kwik-Mix assigns two

All products bearing the trademark Kwik-Mix will be carried by Andrews & Andrews Equipment, S. W. Gibbs St., Portland, Ore. The prod-

ucts are made by Kwik-Mix Co., division of Koehring Co., Port Washington, Wis. A & A will serve Oregon and five Washington counties.

Bradley & Edwards, Inc., 2000 Hillside Ave., New Hyde Park, N. Y., will also carry Kwik-Mix products. The firm will serve Nassau County.

New Parker Seal dealer

Hercules Packing Corp., 327 Washington St., Buffalo, N. Y., has been named a distributor for Parker Seal Co., a division of Parker-Hannifin Corp., Culver City, Calif. The dealer will carry industrial Gask-O-Seals and Stat-O-Seals.



Easy operation, big power, and independent hydraulic controls cut cycle time... "Eucls" average 10 loads per hour on 3500' round trip cycle.

Reliable performance of "Eucls" gives you a bidding advantage... helps protect your profit margin!

Building of the \$137 million Keystone Dam, west of Tulsa, Oklahoma, on the Arkansas River, necessitates relocation of two main line railroads. One of these projects is 14.5 miles in length and involves 5,418,000 cu. yds. of earthmoving. Cosmo Construction Company has a 1.7 million-yard contract with the Army Corps of Engineers, Tulsa District, for two of the four railroad embankment sections on this big relocation project.

Cosmo is using 4 Euclid S-18 scrapers with 4-speed Torqmatic Drives and converter lock-ups. Material being loaded is of two types—hard shale and clay hardpan. A Model TC-12 Euclid Twin-Power Crawler and another tractor of over 200 h.p. push-load the scrapers. On round trip hauls of approximately 3500 ft., each S-18 averages 100 loads per 10 hour shift for a production of 220 bank yds. per hour.

Project Manager Stell Dobbs uses the big Euclid TC-12 for push loading the scrapers in

"Eucl" S-18



the heavy shale—a very difficult material for scraper loading. In this way he makes effective use of the 425 net h.p. in the pusher and 336 h.p. in the scraper—Torqmatic Drive in both machines helps to make this combination a high production team on a tough job.

See your Euclid dealer for information on the complete line of Euclid earthmovers... he can show you how big power, big capacity, big performance "Eucls" can bring you a better return on investment.

EUCLID Division of General Motors, Cleveland 17, Ohio

Watch for Euclid's Big 3 Power Parade in your area!



EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Construction industry plans aid in disasters

"Plan Bulldozer," a brochure from the Associated General Contractors of America, outlines the construction industry's plan for lending a hand in time of disasters such as floods, storms, and fires. All contractors and construction industry groups, whether they are affiliated with the AGC or not, may participate in the program. The brochure outlines the steps that should be taken by disaster-relief staffs in organizing and running a disaster-relief program.

The Office of Civil and Defense Mobilization has recommended the plan to their regional, state, and local authorities. A special form of public liability and property-damage insurance is available from stock and mutual insurance companies, at nominal rates, to all contractors participating in disaster-relief plans.

Copies of the brochure are available from the Publications Manager, AGC, 1957 E St. N. W., Washington 6, D. C.

Convention calendar

August 17-21 National Shade Tree Conference

Conference, Hotel Statler, Detroit, Mich. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

September 20-23 American Public Works Association

Meeting, Olympic Hotel, Seattle, Wash. Robert D. Bugher, executive director, APWA, 1313 E. 60th St., Chicago 37, Ill.

September 21-25 International Council for Building Research, Studies, and Documentation

International Congress, Rotterdam, The

Netherlands. The Congress Secretariat, ICBRS, c/o Bouwcentrum, Postbox 299, Rotterdam, The Netherlands.

September 21-26 International Road Congress

Eleventh World Meeting of Permanent International Association of Road Congresses and Road Show, Copacabana Palace Hotel, Rio de Janeiro, Brazil. Eng. Luiz de Mattos, general secretary, IRC, Avenida Presidente Vargas, 522, 13.0 andar, Rio de Janeiro, Brazil.

September 24-26 New York State County Highway Superintendents Association

Summer Meeting, Lake Placid Club, Lake Placid, N. Y. Harry R. Mason, secretary, NYSCHSA, Fonda, N. Y.

September 28-October 1 American Welding Society

Fall Meeting, Sheraton-Cadillac Hotel, Detroit, Mich. AWS, 33 W. 39th St., New York 18, N. Y.

September 29-October 1 National Association of Corrosion Engineers

Western Region Conference, Bakersfield Inn, Bakersfield, Calif. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

September 30-October 2 Producers Council, Inc.

Meeting, Chase Park Plaza, St. Louis, Mo. PCI, 2029 K St. N. W., Washington 6, D. C.

October 5-8 National Association of Corrosion Engineers

Northeast Region Conference, Lord Baltimore Hotel, Baltimore, Md. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 6-9 Ohio Short Course on Roadside Development

Course, State Office Bldg. and Ohio Union of Ohio State University, Columbus, Ohio. Wilbur J. Garmhausen, Chief Landscape Architect, Ohio Department of Highways, State Office Bldg., Columbus 15, Ohio.

October 11-16 American Association of State Highway Officials

Meeting, Statler-Hilton Hotel, Boston, Mass. A. E. Johnson, executive secretary, AASHO, 917 National Press Bldg., Washington 4, D. C.

October 11-16 American Society for Testing Materials

Third Pacific Area National Meeting, Sheraton-Palace Hotel, San Francisco, Calif. ASTM, 1916 Race St., Philadelphia 3, Pa.

October 19-22 American Bridge, Tunnel and Turnpike Association

Meeting, Hotel Muehlebach, Kansas City, Mo. John Allyn Stearns, executive secretary, ABTTA, Northcourt Bldg., White Plains, N. Y.

October 19-23 American Society of Civil Engineers

Annual Convention, Hotel Statler, Washington, D. C. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

October 20-22 National Association of Corrosion Engineers

North Central Region Conference, Cleveland, Ohio. T. J. Hull, executive secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

October 25-28 National Lubricating Grease Institute

Meeting, Roosevelt Hotel, New Orleans, La. T. W. H. Miller, general manager, NLGI, 4638 J. C. Nichols Parkway, Kansas City 12, Mo.

October 26-28 National Highway Conference for County Engineers and Officials

Seventh Annual Conference, Leamington Hotel, Minneapolis, Minn., sponsored by the County and Local Roads Division of the American Road Builders' Association. ARBA, World Center Bldg., Washington 6, D. C.

October 29-30 National Slag Association

Forty-second Annual Meeting, Boca Raton Hotel and Club, Boca Raton, Fla. E. W. Bauman, managing director, NSA, 613 Perpetual Bldg., Washington 4, D. C.

November 2-6 Prestressed Concrete Institute

Fifth Annual Convention, Deauville Hotel, Miami Beach, Fla. Martin P. Korn, executive secretary, PCI, 425 N. E. Fifth St., Boca Raton, Fla.

For more facts, circle No. 301

Scrapers Maintain High Production on Railroad Relocation Project



TC-12 "Twin" Crawler (425 net h.p.) and S-18 Scraper (336 h.p.) team up to get a 22 bank yd. load of heavy shale in a hurry.





(Additional photo on front cover)

Little room is left for equipment to operate in the 16-foot-wide bottom of the Driftwood Canal, part of a USBR irrigation project for 16,000 acres near McCook, Nebr. Scrapers work in three groups. In this spread are two DW21's, with D8's as pushers.

Cut-area irrigation simplifies canal job

Contractor saves money by watering cuts and then moving dirt for Driftwood Canal

MUSCLES under the mainline!

Rodgers Hydraulic Jacks

push three 88 foot tiles under railroad without disrupting traffic

Two 200 Ton Rodgers Hydraulic Jacks were selected by W. J. Irwin & Sons, Inc., Tonawanda, N. Y. for driving three sewer pipes of 96" I. D. reinforced concrete tile 88' under the mainline of the New York Central Railroad. Part of a 2½ million dollar sewer contract on the Tonawanda West Side Drainage Project, the "push pipe" method was preferred because it permitted unrestricted use of the rail right-of-way overhead.

TIME: 34 DAYS—Actual jacking time consumed 34 days based on three-eight hour shifts a day. Each sewer took eleven 8-foot tile sections. The *First Line* required 14 days; the *Second Line* 11 days and the *Third* only 9 days.



JACKING PROCEDURE—A service pit 28' deep by 22' wide by 40' long was excavated to house the jacking equipment. A pair of 75 lb. steel rails placed on the concrete pit floor cradled the tile sections and acted as a guide for the jacking operation. Type of soil encountered in all three pipes was a mixture of heavy yellow and blue clay.

EQUIPMENT USED—Two 200 Ton Rodgers Hydraulic Jacks with 48" ram travel were powered by a Rodgers Model D2 electric driven hydraulic pump located at the top of the excavation pit. A valve panel located at the bottom of the pit permitted accurate control of the jacking operation.



↑ Steel rails cradle tile sections as twin Rodgers Jacking Cylinders press against the wooden jacking frame. Heavy grease on outside of tile cuts down friction—for easier sliding.

← Rear of excavation pit showing Hydraulic Jack against abutment wall. At this stage the ram is extended approximately ½ of the 48" ram travel.

ADVANTAGES OF HYDRAULIC JACKING—This job was handled at low cost and was unique due to the short time required for completion and the fact that rail service overhead continued uninterrupted throughout the tunneling project below. Entirely different from conventional tunneling, the "push pipe" method also provides greater safety to workers from cave-ins since they work inside the tile that is being driven.

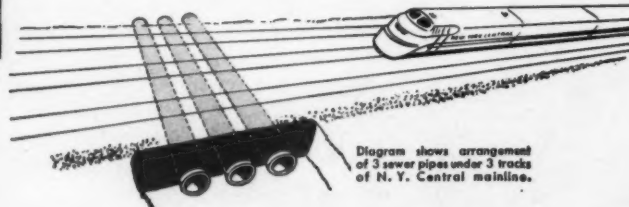


Diagram shows arrangement of 3 sewer pipes under 3 tracks of N. Y. Central mainline.

If you'd like more details about this job, write for free copy of Bulletin 331.

Rodgers Hydraulic Inc.

7415 Walker St. • Minneapolis 16, Minnesota



For more facts, use Request Card at page 18 and circle No. 302

Cutting a canal through knobby hills and carrying it across deep valleys presents plenty of challenges to the men moving the dirt.

And the men working on the Driftwood Canal excavation near McCook, Nebr., had their share of the challenges. Depending on which way they wanted to go, the country was either straight up or straight down.

It was bone dry, too. And yet the fill had to be wetted to nearly 20 percent moisture for good compaction. There was little room to work. Moving equipment in the narrow cuts and on top of the high fills was like trying to push two-way traffic up a one-way street.

The biggest problem was getting the moisture to the fills. The dry loess, a sandy silt material, needed a lot of water for good compaction, and the nearest water was often several miles away. Hauling the water by truck would have meant long hauls over steep roads. Wetting the fill by sprinkler truck would have further congested the top of the narrow embankment.

To lick the problem, the contractor decided to pipe the water to the cut areas, wet these areas down before they were cut, then move the dirt. This unusual method made it unnecessary to haul water to the job, and it reduced the amount of equipment needed on top of the narrow fill.

The excavation along this particular section of the Driftwood Canal was handled by Wentz Construction



Water for irrigation of the cut areas comes from an older canal several miles from the new one. On the bank, a Cat D315 engine turns a Gardner-Whitcomb 6-inch pump. A 6-inch aluminum pipe leads to a booster pump. Pipe carries 400 gpm some 16,000 feet and raises it 185 feet to the job.

CONTRACTORS AND ENGINEERS



of the three scrapers in another group is pulled by a D8. This section is nearly level. The steep cut is on $\frac{1}{4}$ to 1 slopes. This is one of the few materials that will hold a steep slope.

A Cat No. 12 motor grader prepares to plane the steep side slope. Each of the three groups of equipment working on the canal included a motor grader to finish off the slopes and maintain haul roads.



Co., Concordia, Kans. It had about 15 million yards to move along a 14.2-mile length of the canal. Wentz subcontracted the dirt from Bushman Construction Co., St. Joseph, Mo., which held two contracts on the Driftwood Canal totaling \$2 million dollars.

Bushman concentrated its forces on building the siphons, cross drains, and other irrigation structures. Many of the smaller structures were pre-cast in a central yard, while the 102-inch-diameter siphons were formed and cast in place at the rate of 25 feet a day.

The work is a part of a recent project of the U. S. Bureau of Reclamation to irrigate some 16,000 acres of hilly, arid land south of the Republican River in the vicinity of McCook. The water for the Meeker-Driftwood Canal flows from the reservoir formed by Trenton Dam, which was completed by the Bureau in 1953. Since construction started on the reservoir end of the canal in 1954, 47 miles of channel and 43 miles of laterals have been completed.

Irrigating the cut

Wentz Construction Co. laid two parallel lines of aluminum irrigation pipe on the ground over the deeper cuts. On the shallower cuts, only one of the sprinkler lines was necessary.

(Continued on next page)

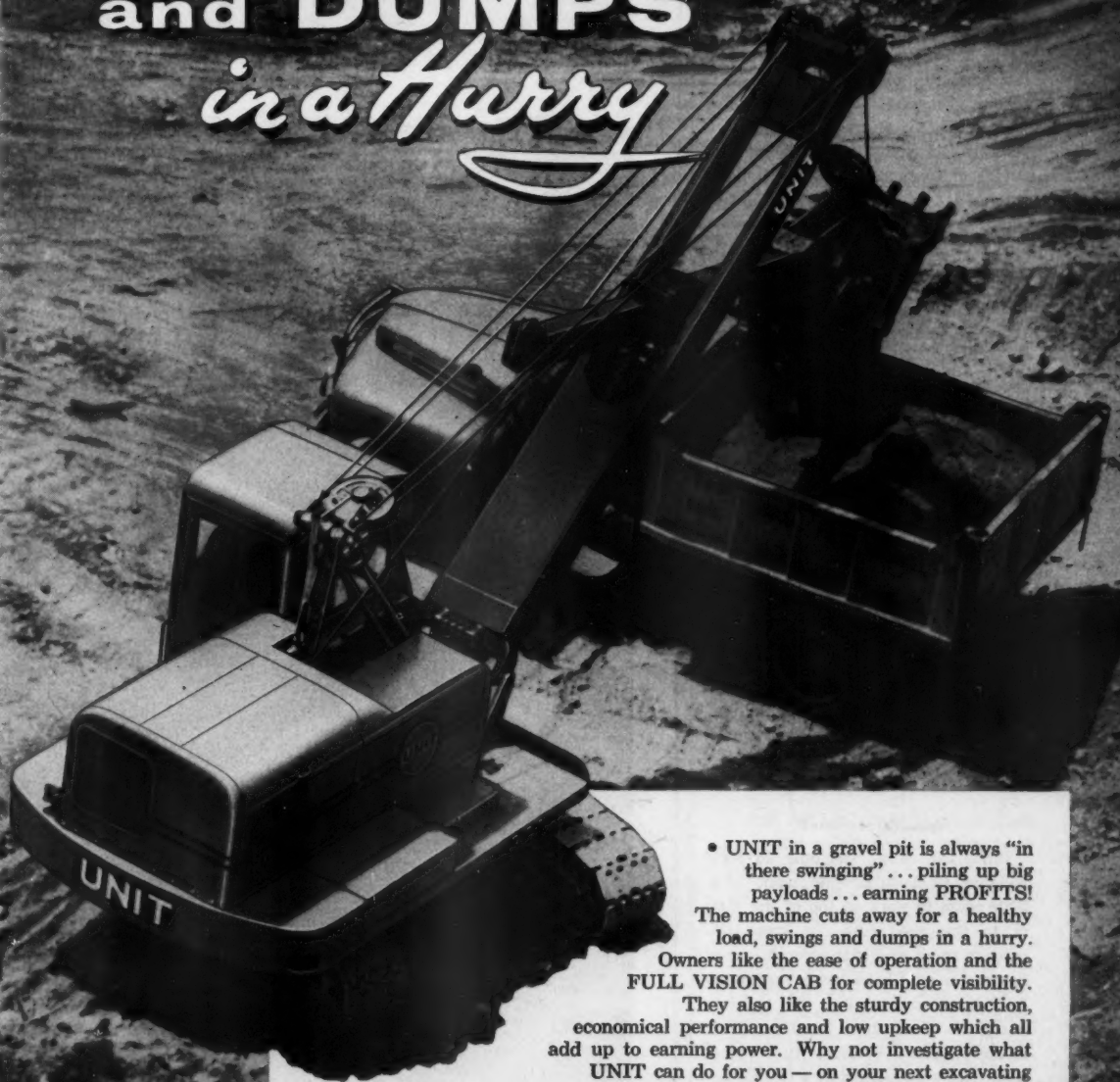


Use of the sprinkler system eliminated the need for water trucks to make long hauls and to work on the narrow embankments. A Seaman rotary tiller at left foreground is working on the soil-cement lining. At right, a D8 and 463 scraper work on the bank of the canal, while a Cat grader maintains the haul road.

For more facts, circle No. 303--



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On experimental sections, the sides of the ditch are lined with a 2-foot thickness of soil-cement, using 2½ and 4½ per cent mixtures of cement with soil. A Ferguson tractor with contractor-built spreader spreads the cement. A Seaman rotary tiller pulled by an International WD-9 follows.

Hemmed in by the steep walls of the job's deepest cut—78 feet—a DW21 makes a U-turn to head for the dump area.



(Continued from preceding page)

sary. Pipes were laid on the natural vegetation. The grass and weeds absorbed and distributed the water better than either plowed or bare earth.

Water soaked about 10 feet into the sand silt in 24 hours. It seemed to go straight down rather than fan out. The deeper cuts (50 to 70 feet) were watered as long as 60 hours. It was desirable to wait a couple of weeks before starting the cut to give the moisture a chance to sink in and become distributed.

It took a lot of pipe and a lot of push to get some 400 gpm to the cut area. In fact, it took 7,500 feet of closed 6-inch aluminum pipe, an equal amount of sprinkler 6-inch pipe, and 1,500 feet of sprinkler 4-inch pipe.

A Gardner-Denver 6-inch pump, powered by a Cat D315 diesel engine, took the water from an irrigation ditch and pushed it to a 6-inch booster pump about 90 feet higher than the ditch. The Gardner-Denver booster pump, powered by a Cat R-D-6 with power takeoff, shoved the water to the top of the cut area. Total lifts for both pumps were as much as 185 feet.

Generally, the irrigation was successful in bringing up the moisture content of the in-place soil to about 17 to 20 per cent. The material, after being moved by scrapers, was compacted by sheepfoot rollers to 95 per cent of maximum density. When the dirt was too dry for good compaction, tank trucks hauled additional water to the fill area.

Spreads are small

Since the canal was only 16 feet wide at its bottom, equipment had little room to work on top of the fills or in the deep cuts. To keep the spreads small and maneuverable, the contractor split his seven scrapers up into three groups. For the shorter hauls, he used three tractor-pulled scrapers. When necessary, the Caterpillar rigs were pushed by a D8. There were two DW21's in the second spread and two DW15's in the third. On both spreads, D8's did the pushing.

Each equipment group was supported by a Cat No. 12 motor grader, which maintained the haul roads and

Tough contracts usually have one thing in common...

GARDNER-DENVER



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HIGHWAYS

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AUGUST,

finished off the steep $\frac{1}{4}$ to 1 slopes of the cut. The material on the fills was compacted by LeTourneau-Westinghouse sheepsfoot rollers pulled by International WD-9 tractors.

Cuts and fills

The cuts were deep, steep, and sometimes stepped. The walls of the cut were normally on $\frac{1}{4}$ to 1 slopes, since the loess material holds this position better than a more gradual slope. On the deeper cuts, which went down to 78 feet, the slopes were stepped with berms in two and sometimes three stages.

The fills, although less spectacular, were more difficult to build. They often started in a narrow gully that had to be excavated down 4 or 5 feet before being built up. In removing

the undesirable material, the bowl of the scraper was sometimes going down while the front wheels were going up. When building the fill, the contractor had to be particularly careful to keep the moisture near optimum and to give the material adequate rolling with the sheepsfoot.

Soil-cement lining

Normally, the sides and the bottom of the channel received an impervious earth lining. The lining was 6 feet thick on the sides and 2 feet thick on the bottom. Along certain stretches, however, the Bureau experimented with a soil-cement lining, hoping to reduce erosion at a reasonable cost. It tried a 2½ per cent and a 4½ per cent mixture on a 2-foot-thick layer on the sides of the channel only.

Bag cement was spread by a tractor spreader and then mixed with the soil by a Seaman rotary tiller. A water truck ran over the mixture to add the water.

A. N. "Bill" Wilcox superintended the job for Wentz Construction Co. His foreman was C. W. Johnson, Jr. Bob Olmstead was superintendent for Bushman Construction Co., the general contractor.

William J. Quinn is construction engineer of the Frenchman-Cambridge Division of the Missouri River Basin Project for the Bureau of Reclamation. Gilbert Rollstin is office engineer. Resident engineers on the canal are Russell Vinsonhaler and Edward Olson. The Bureau personnel work out of the Kansas River Project office in McCook.

THE END

Rubber expansion joints tested on concrete road

A new rubber expansion joint, designed to eliminate rhythmic road shock where concrete slabs meet, is being used on an experimental stretch of the Baltimore-Harrisburg Expressway now under construction at Hereford, Md. Each of the five sets of B. F. Goodrich rubber expansion joints will be bolted together to extend across each lane of the dual highway. The 13-inch-wide joints will be anchored in the concrete for a watertight seal.

The rubber joints remain level with road surfaces regardless of expansion or contraction motions of highways or bridges due to temperature changes. Available in standard 6-foot or 6½-foot lengths, the joints have a series of steel plates bonded to the rubber to carry the vertical loads.

Gunpowder Bridge will be cushioned on both sides by the rubber expansion joints. The performance of the joints at these points is more critical, since bridge structures expand and contract faster than highways.

Surveying book expanded in new revised edition

The information required for an understanding of the basic principles of surveying and of the topics encountered in usual surveying practices can be found in "Surveying," written by the late Harry Bouchard and revised by Francis H. Moffitt. This fourth edition includes a new chapter on the basic principles of photogrammetry.

The chapter on state plane coordinate systems has been completely revised and expanded. A brief description of the automatic or self-leveling type of level has been included. The chapter on random errors has been rewritten, and the chapter on traverse computations has been extensively revised. A list of problems concludes chapters on measurement of horizontal distances, leveling, random errors, direction of a line, measurement of angles, field operations with the transit, traverse surveys and computations, horizontal and vertical curves, triangulation, and others.

Priced at \$10.50, the book may be purchased from the International Textbook Co., Oak and Pawne Sts., Scranton 15, Pa.

Map contains historic, modern views of Nevada

The Nevada Department of Highways has issued its 1959 official highway guide. The map folder includes a series of sketches suggesting the state's pioneer past, plus color reproductions of Virginia City, which is celebrating the centennial of the silver discovery there, and of the old mining towns of Austin and Eureka. In contrast, there are full-color scenic views of modern Nevada.

Copies of the map may be obtained from Nevada's five highway division offices, chambers of commerce, or from the Nevada Department of Highways, State Office Bldg., Carson City, Nev.

one thing in common EQUIPMENT



HIGHWAYS TUNNELS PROJECTS

Miss. Turnpike
Illinois Tollway
Ohio Turnpike
San Francisco Freeway
Pennsylvania Turnpike Extension
Trans-Canada Highway
Snoqualmie Pass
West Virginia Tollway
Connecticut Turnpike
Donner's Pass
New Jersey Turnpike
Kansas Turnpike
Bangor By-Pass

TUNNELS

Hanaballa
West Delaware
Swift Creek
Washington Aqueduct
Escamene-Tumut
Toama-Tumut
Chicago Water Tunnel

Allegheny Sewer Tunnels
Jaybird Tunnel
Bowery Bay
Fremont Canyon
Boston Water Tunnels
Western Pacific Railway
Roberts Tunnel
Bingham Canyon
Pacific Gas and Electric
Glen Canyon Diversion and Access
Ontario Hydroelectric
Canyon Ferry
Clear Creek
Rampart Range
Mammoth Pool
Cherry Tunnel

PROJECTS

Lucin Cutoff
Calumet-Sag Channel
Chiese Hydroelectric
Snowy Mountain Hydroelectric
Chicago Filtration Plant

Noxon Rapids Hydroelectric
Beauharnois Canal
Little Falls
Lewiston Power
Ferrocarriil-Chihuahua-Pacifico
Railway
St. Lawrence Seaway
Kings River Project
Silver Falls Hydroelectric
Trans-Canada Pipeline
Feather River
Pacific Northwest Pipeline
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For more facts, use Request Card at page 18 and circle No. 304



100
1959
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AUGUST, 1959



Defective sewer plan

THE PROBLEM: A municipal sewer-construction contract fixed a lump-sum price, but it was arrived at by totaling unit prices specified in an accepted bid. The contractor's test holes indicated a suitable site for the work. As the work progressed, the city engineer, as provided in the contract, directed that between certain stations the contractor place sand-stabilized shell in the trench bottom. The contract did not state how much shell was to be placed; this was to be de-

termined as work progressed. Between these stations, the city engineer directed that 4 to 6 inches of shell be placed. It was done.

Before all of the work was completed, there were five breaks in the line between the stations mentioned. These were not due to defects in workmanship or materials, but were caused by heavy rains. At the points of the breaks it appeared that some distance below the pipes there was quicksand, though this was not known at the time the pipe was laid. The ground was dry when the 4 to 6 inches of shell was used at the direction of the city engineer, and such amount seemed sufficient. When the water rose in the trench, the pipe sagged and caused the breaks. Was the contractor entitled to reimburse-

Edited by A. L. H. STREET Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt, consult your own attorney.

ment for the additional expense thus incurred?

THE ANSWER: Yes. (City of Houston v. L. J. Fuller, Inc., 311 S. W. 2d 285, decided by the Texas Court of Civil Appeals, Houston.)

Because this was a unit-price contract, the court said that the case did not fall within the rule in Texas "that if a contractor agrees to con-

struct an improvement according to certain plans and specifications for a fixed or lump sum, he assumes all risks as to the sufficiency of the plans and specifications, and is bound to furnish the finished improvement according to such plans and specifications. In case of destruction or damage to the improvement, prior to acceptance by the owner, due to defects in plans and specifications or because of any other occurrence, apart from a legal wrong of the owner, the loss must fall on the contractor. The contractor is in as good a position as is the owner to know whether the plans and specifications are sufficient for the purpose, and if he agrees to build the improvement according to them at a fixed price, he must do so."

The court noted that in each of the cases in which that rule had been applied by the state's appellate courts, there was a contract under which the contractor had agreed to construct an improvement for a fixed sum according to the owner's plans and specifications.

In this case, the court also decided the additional work was not "extra work," to be covered by written order. This was additional, stabilizing work required by the contract.

Nor was the contracting firm deprived of a right to this additional compensation because this amount was not covered by the city comptroller's certificate of availability of funds required by charter budget provisions. The certificate of availability of funds to complete the contract work sufficed.

Subcontractors did not "hew to the line"

THE PROBLEM: Defendants were employed as subcontractors on a U. S. Army Corps of Engineers project to "trench for the installation of a water line as per the plans." Defendants claimed that the plans showed that the line was to be laid 18 feet from the center of an access road, and they started work accordingly. An assistant resident engineer of the Corps warned that trenching along that line would not conform to the plans and would not be acceptable. Defendants refused to trench farther from the road, evidently because it would have involved more difficult excavation. Plaintiff, the prime contractor, had the work done by others at increased expense. Was he entitled to collect damages from defendants?

THE ANSWER: Yes. (Halpern v. Rodway, 167 N. Y. Supp. 2d 260, decided by the New York Supreme Court, Trial Term, Queens County.)

The court said that there was expert testimony to the effect that such plans as were involved would allow some leeway, and that under certain conditions a contractor or subcontractor would not be held "to the mathematically correct or exact location of a water line." But the evidence as a whole showed that defendants did not follow the line called for by



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the plans, and that the army engineers justifiably refused to sanction the line chosen by defendants. Defendants made an improvident contract, and it is a "well settled rule of law that a party must fulfill his contract obligations." This was true even if plaintiff, the prime contractor, because of greater experience, knew that defendants were making an improvident contract.

County waives arbitration

THE PROBLEM: A county building contract provided that any dispute arising between the parties should be arbitrated. The county contracting authorities were notified by the contractor of its claim of right to extra pay for excavating, which was disputed by the county. The claim remaining unpaid, the contractor sued to collect. Was the county entitled to dismissal of the suit on the ground that the contractor had not demanded arbitration?

THE ANSWER: No. (Earl T. Browder, Inc. v. County Court of Webster County, W. Va., 102 S. E. 2d 425, decided by the West Virginia Supreme Court of Appeals.)

The court said that it was just as much the duty of the county to demand arbitration before suing as it was the contractor's duty. But the validity of a provision in a contract for arbitration was recognized as precluding suit—except to enforce the arbitrators' award—unless arbitration has been waived.

However, as shown in the item that immediately follows, the court set aside judgment in the contractor's failure for want of proof that additional work had been legally authorized.

Additional public work was not legally ordered

THE PROBLEM: A county contract for hospital construction was formally authorized as required by law. Later need for removing a cliff at the rear of the site to provide parking space and entrance to the building was recognized. The president of the county court (county administrative board), which had awarded the building contract, authorized the contractor to do that additional work. The other members of the court knew of this authorization and tacitly approved it, but no order was entered upon the official records and no written contract covering this work was entered into. Was the contractor entitled to collect \$22,426.93, plus interest, the reasonable value of the work done outside the building contract?

THE ANSWER: No. (Earl T. Browder, Inc., v. County Court, Webster Co., 102 S. E. 2d 425, decided by the West Virginia Supreme Court of Appeals.)

The court said that, because a state law required that all proceedings by the county court be recorded, no valid contract existed. Nor could the county be held liable on a theory that it would be unjustly enriched to the extent of the value of this additional work if it were permitted to escape on

that technicality.

The Supreme Court distinguished this case from Corns-Thomas Engineering & Construction Co. v. McDowell County Court, 115 S. E. 462, which it had previously decided. The distinction was based upon the fact that an unforeseen condition had arisen under a bridge construction contract, while in this case removal of the cliff was not essential to performance of the building contract. In the bridge case it was discovered in excavating for footings that a solid base did not exist at the depth contemplated by the contract. It was decided that the contractor was entitled, under verbal authorization by the president of the county court, to deepen the excavation to a solid base. The contractor would have been

justified in refusing to proceed unless assured additional compensation.

In the later case, the court reasoned: "Proper consideration must be given to the interest of the public whose money is spent to obtain property and services for the public weal, and that consideration is no less important than the matter of the justness of claims of individuals dealing in an unauthorized manner with the county courts or their members. Civil or criminal liability of the members of county courts is not a wholly satisfactory remedy for or insurance against the liability imposed upon counties by reason of unlawful acts of the members of such courts, even if perchance an individual member of the public is damaged by such unlawful act, and even though it would

seem dishonest to leave such individual so damaged without compensation for his loss."

Motor-vehicle taxes

THE PROBLEM: The Michigan motor-vehicle registration law exempted "special mobile equipment," defined as vehicles not designed or used primarily for transporting persons or property and only incidentally moved over the highways. This included equipment such as farm tractors, road construction or maintenance machinery, and ditch-digging and well-boring apparatus. Plaintiff, exclusively engaged in building bridges and highways under contracts with the state and municipalities, challenged the right of the state to re-



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For more facts, use Request Card at page 18 and circle No. 307

Avoid legal pitfalls

quire registration and payment of taxes imposed by the law upon equipment consisting of six batch trucks. The trucks are used only for transporting concrete mix from a mixing plant to a highway location being paved.

During the period involved, plaintiff used these trucks in paving an expressway that had service roads on either side. Part of the travel by these trucks was over these service roads, which were highways then open to

public travel. The number of such trips extended at least into the hundreds. The trucks are not moved from one construction job to another under their own power but only upon specially constructed moving flats licensed for over-the-road hauling. Was the equipment exempt under the law?

THE ANSWER: No. (Davidson v. Hare, 87 N. W. 2d 131, decided by the Michigan Supreme Court.)

The court rejected argument that there should be exemption of equipment used in performing a state contract, on a theory that the equipment would be exempt if owned by the

state. (The argument overlooked the fact that the law had been so amended that the state would not enjoy such exemption.)

The court also said that it was no valid objection to the statute that those contracting with the state and its municipalities would naturally add the taxes to the prices bid for public projects, thereby involving a waste of public funds needed for actual construction work. That was a matter for the legislature to consider, not the courts.

The court concluded that the batch trucks were not exempt from registration because they failed to qualify

as vehicles "not designed or used primarily for the transportation of persons or property and incidentally operated or moved over the highways." The batch trucks were (1) designed and (2) used primarily for the transportation of property, and (3) their operation over service roads open to public travel was more than incidental. Existence of any one of these three factors, all of them here present, would defeat the claimed exemption.

Municipal licenses

THE PROBLEM: Although not specifically empowered by statute or charter to do so, one village adopted an ordinance requiring a license to "engage in the business of cement contractor or the construction or repair of cement work." Payment of a \$25 license fee was imposed. Another village passed an ordinance requiring a license, obtainable on payment of a \$15 fee, to engage in the business of "mason contracting or of constructing or repairing sidewalks in any public street or place." Were the ordinances valid on a theory that they facilitated enforcement of regulations contained in other admittedly valid ordinances dealing with the construction of buildings, sidewalks, and the use of streets?

THE ANSWER: Yes. (Concrete Contractors' Association of Greater Chicago v. Village of LaGrange Park, 150 N.E. 2d 783, decided by the Illinois Supreme Court.)

The court said that a statute requiring mason contractors in cities of 150,000 or more population to secure licenses, based on proficiency examinations, and making such licenses valid throughout the state, did not manifest legislative intent to keep licensing power from villages.

However, two justices of the Supreme Court dissented on the grounds that the majority opinion did not explain how imposing a license fee on the contractors covered by the ordinances would facilitate enforcement of the general building and construction regulatory ordinances. Since the license ordinances under fire did not provide for any valid regulation of concrete and mason contractors, the dissenting justices reasoned that the exaction of license fees amounted to an attempt to secure unauthorized tax revenues under the guise of fees ostensibly imposed to cover the cost of enforcing regulations.

Faulty street engineering

THE PROBLEM: A general contract involved construction of streets. After the subcontractor had completed work and moved off the job, extra subgrading was required as a result of faulty engineering by the general contractor. Was the general contractor entitled to deduct the cost of extra subgrading from retained percentages of the money due the subcontractor?

THE ANSWER: No. (Vilbig Bros. Inc., v. C. H. Leavell & Co., 319 S.W. 2d 731, decided by the Texas Court of Civil Appeals, Texarkana.)

CONTRACTORS AND ENGINEERS

MONOTUBE PILES

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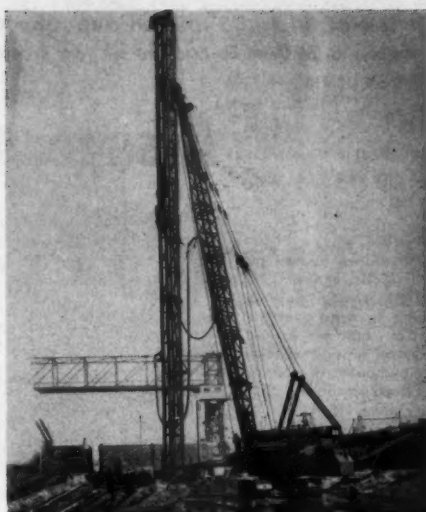
For more facts, use Request Card at page 18 and circle No. 308

Flexibility of pipes analyzed in book

"Analysis of Pipe Structures for Flexibility," by John Gascoyne, is available from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

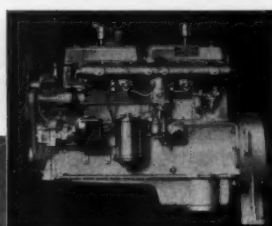
Topics discussed are codes and standards, methods of stress calculation, preliminary data and basic assumptions, elastic-center method of stress calculation, translation of results, and pipe supports. Two chapters are devoted to work examples. Four appendixes contain tables and information on the American Standards Association sections, physical properties of pipes, and thermal properties of piping materials. The book is priced at \$7.50.

FOUNDATION PILES are driven for the concrete basin of Chicago's new central district filtration plant. A Manitowoc Model 3000 crane with Vulcan pile driver hammers the 50-foot-long 1-ton piles into the sand and clay until only a foot protrudes. Each of the 107,000 piles will support a load of 25 tons. The new plant, expected to be completed by late December, 1961, will provide filtered water for 3 million persons in the city and in 26 suburbs.

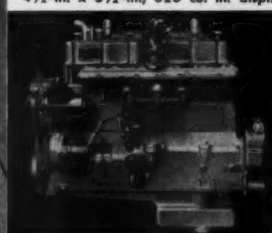


17,300 lbs

pick it up
...or
put it
down

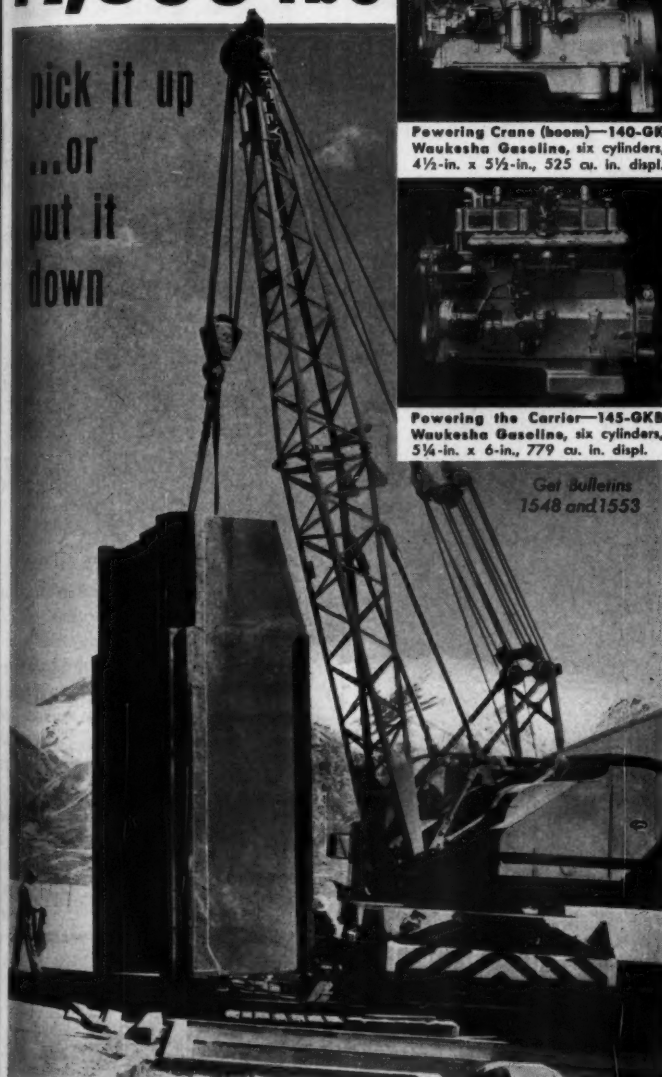


Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4 1/2-in. x 5 1/2-in., 525 cu. in. displ.



Powering the Carrier—145-GK Waukesha Gasoline, six cylinders, 5 1/4-in. x 6-in., 779 cu. in. displ.

Get Bulletins 1548 and 1553



77,300 lb. section of press, for fabricating Bomarc surface to air missile parts, was picked up with 40' boom at 18' radius over the side and swung to rear, boomed out to 24' radius and lowered 10' to its base. Waukesha 140-GK engine with torque converter powers crane boom.

INSLEY TRUCK CRANE does it with WAUKESHA POWER

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN
NEW YORK TULSA LOS ANGELES

Factories — Waukesha, Wisconsin, and Clinton, Iowa
For more facts, use Request Card at page 18 and circle No. 309

ARBA 1959 directory of highway personnel

The 1959 edition of "Highway Officials and Engineers," a pocket-size directory published by the American Road Builders' Association, contains more than 1,700 names, titles, and addresses of administrative engineers and officials in the 50 state highway departments, the District of Columbia, and Puerto Rico.

The directory also lists administrative personnel of the Bureau of Public Roads, including the heads of its regional offices and the division offices in each state; engineers and administrative personnel of toll-road authorities; and officers and directors of ARBA, its eight organized divisions, and its headquarters staff.

Priced at \$1 per copy, the directory may be purchased from the ARBA, World Center Bldg., Washington 6, D. C.

Three AGC publications on bidding, insurance

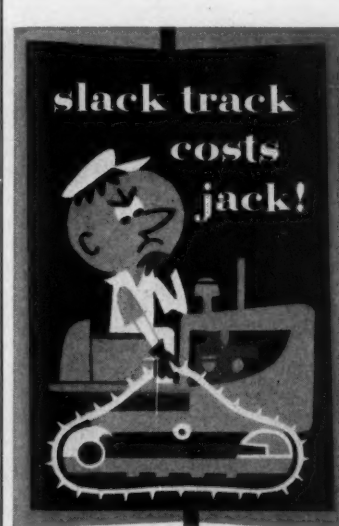
Three new publications, designed to be of service to architects, engineers, contractors, and construction-contract awarding authorities, are offered by The Associated General Contractors of America, Inc.

"A Recommended Guide to Bidding Procedure on Engineering Construction" is an up-to-date reference and procedural document for use in competitive bidding on engineering construction projects.

"A Suggested Guide to Bidding Procedure on Building Construction" basically establishes the recommended practices for use in competitive lump-sum bidding for private work. It is also applicable on public work where requirements permit.

"Insurance and Bond Check List" includes the type of insurance and bonds that are commonly used by general contractors. It provides contractors with a record for each project, as well as a check to be sure they have adequate coverage.

Single copies of the publications may be obtained free of charge from the AGC, 20th and E Sts. N. W., Washington 6, D. C. Quantity prices will be furnished upon request.



Even "the toughest track ever made" (Allis-Chalmers, of course) needs adjustment to give you the extra life that's built into it. Make this on-the-job track check.

Take a pry bar and see how far you can raise the track above one of the support rollers. More than two inches means it's too loose. Take up the slack, move the tractor back and forth to equalize the tension, then check again.

Regular track inspection is an easy way to make sure you get the most out of "the toughest track ever made."

WHAT toughest REALLY MEANS

It's more than just talk. Take sidebars, for instance. Some track makers get by with mere surface hardening, which sacrifices wearing quality for easier machining. But Allis-Chalmers deep-hardens the forged steel, leaving a tough inner core for high impact strength. Then, pin and bushing bores only are annealed, and the superhard sidebar is machined to precise finish dimensions.



The moral of the story: Stay on the right track—"the toughest track ever made." Get original-quality parts from your Allis-Chalmers dealer.

move ahead with **ALLIS-CHALMERS** power for a growing world
For more facts, circle No. 310

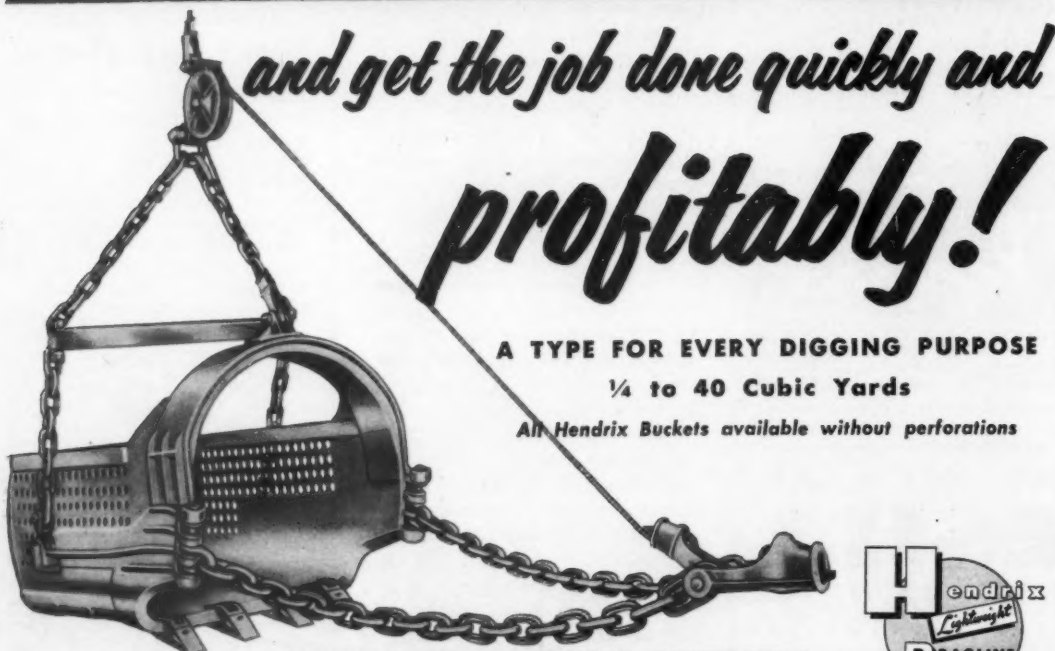
To keep on top of \$4 to \$5 million annual construction at points within a 200-mile radius of the home office,

A super takes to the air

One of the planes owned by Weymouth Construction Co., Memphis, Tenn., flew right in to a job site. Looking over the work, left to right, are Arnold Beyer, general superintendent; Claude Weymouth, president; and David Weymouth, pilot and safety officer.



HENDRIX DRAGLINE BUCKETS



HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

For more facts, use Request Card at page 18 and circle No. 311



Arnold Beyer set the controls of his single-engine plane and reached for his lunch bucket. As he munched a sandwich, he glanced down at the winding course of the Mississippi River, some 4,000 feet below. With only the sky and the clouds for company, he leaned back in the cockpit and enjoyed his lunch.

For Arnold Beyer, general superintendent of Weymouth Construction Co., Memphis, Tenn., it had been a busy morning. From the home office in Memphis, he had flown his Piper Tripacer some 50 miles to the company's mat-casting operation at Helena, Ark. They were glad to see him. His plane carried a spare part for the batch plant that had been ordered the day before.

After checking with the job superintendent on the progress of the work, Beyer took off from the 1,200-foot runway at the casting yard. He pointed the nose of the plane north for the 18-mile jaunt to Caruthersville, Mo., where another concrete-mat-casting operation was going on. At Caruthersville, he talked with the job superintendent. Production was down. They tried to work out a way of getting it back up again.

Now it was past noon, and Beyer was eating his lunch on his way to Millington, Tenn., and a concrete overlay job at the Memphis Naval Air Station. He hoped they would have no problems waiting for him. After visiting the air station, he intended to fly the 18 miles back to the home base at Memphis. To wind up his day, he planned on driving out to visit a couple of curb-and-gutter jobs in the city.

Company takes to the air in '53

Weymouth Construction Co. has been using planes since 1953, and the planes have made themselves practically indispensable in the firm's management of an annual contract volume of from \$4 to \$5 million. The jobs, which include almost anything built of concrete, are generally within a 200-mile radius of Memphis.

At present, the company uses two planes: a Piper PA22 Tripacer and a Piper PA23 Apache. The single-engine Tripacer is flown by the general superintendent. The twin-engine Apache is flown by the company's pilot and safety officer, David J. Weymouth.

Beyer learns to fly at 47

Contrary to the familiar adage, you can teach an old construction man new tricks. Beyer learned to fly just five years ago when he was 47. After 30 hours of flying with an instructor, he made his first solo flight. The cost of the flight instruction, plus the cost of the plane, was \$15 an hour.

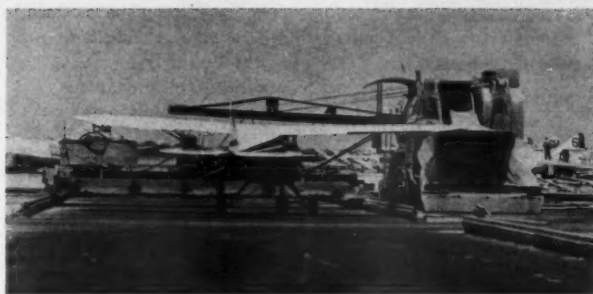
"You have to devote yourself to learning how to fly," Beyer says. "There is a lot to learn. Not only about the handling of the plane, but about the radio, the instruments, the weather. And when you're up there

CONTRACTORS AND ENGINEERS

alone, you've got to know what you're doing. There's nobody around to help you."

In five years of flying, Beyer has had only one accident. Enough for a lifetime. He was landing on a concrete pavement and failed to see a horizontal guy wire stretched across the road between two telephone poles. His wheels caught the wire, and he caught two weeks in a hospital. After being patched up, he was back in the air again.

As Beyer modestly puts it, "You don't quit driving a car just because you've been in an automobile accident. So I keep on flying. And you can bet I keep a sharp lookout for guy wires. If an accident doesn't kill you, it makes you a better and safer pilot." David Weymouth, pilot and son of



A frequent visitor to the several company jobs within a 200-mile radius of Memphis is the Piper single-engine Tripacer, left, which is flown by general superintendent Beyer. The \$9,000 4-place plane operates on about \$3 worth of gasoline and oil per hour.

the president, spent a good many hours in the air before he ever learned how to fly. As a one-time member of a bomber crew, he has 32 missions over Germany to his credit. In 1953, he learned to fly at the University of Alabama. Now, he pilots the company's twin-engine Apache.

Flying saves money

According to the president of the company, Claude Weymouth, flying has resulted in more profits for the company. "It is difficult to estimate just how many dollars we save each year by using airplanes," he says, "but certainly our general superintendent can get around to more jobs in a much shorter time. And," he adds, "I'm sure we avoid mistakes

and make money because of his closer contact with the jobs. Just how much money, I don't know."

Weymouth says that by flying out to the jobs himself several times a week, he can see where the money is going. "If I think the money is being wasted," he states, "we can tighten up on the job—figure out a better way of doing it."

Planes go to work

The company planes are most frequently used to carry key personnel out to the jobs, but they also help in other work. Before setting up for a new contract, the president and the general superintendent often look a site over from the air to determine the best layout for the job. This

bird's-eye view often helps them to determine the best location for a batch plant. From the air, they can spot the water supply and the railroad lines.

Sometimes the planes are useful in checking on a promised shipment of cement. It takes only a little time to fly 50 or 100 miles up the Mississippi River to check the exact location of the barge carrying the cement.

By visiting the construction projects frequently, David Weymouth, the safety officer, can keep a careful watch on his safety program.

Weather restricts use of planes

As a safety precaution, the planes are not generally used at night, and they never fly in rainy or overcast weather. This is not as big a disad-

for
FASTER,
more
ACCURATE
HIGHWAY
MEASURING

USE A

ROLATAPE
MEASURING WHEEL



FOR HIGHWAY REPAIR

One man can measure as fast as he normally walks when using the Rolatape 400. Total is automatically recorded in full view of the operator.

HIGHWAY CONSTRUCTION

Rolatape's accuracy and speed are ideal for important measurements connected with estimating, daily progress reports and final inspection.

HIGHWAY MAINTENANCE

Street marking and sign placement require accurate measurements—the degree of accuracy you get with Rolatape's precision 400 wheel.

WRITE TODAY FOR
FULL DETAILS

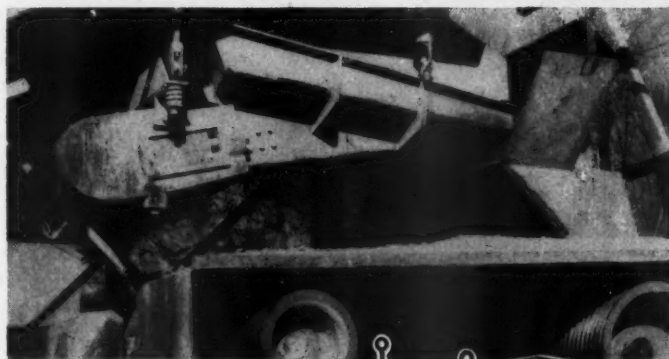
ROLATAPE, INC.

1741 SANTA MONICA
14th ST. CALIFORNIA

For more facts, circle No. 312

AUGUST, 1959

SYNTRON Vibra-Flow VIBRATORY FEEDERS



Feeding stone from scalper to secondary crusher

Reduce bulk materials handling cost

SYNTRON Vibratory Feeders are designed for efficient, dependable, high capacity handling of sand, gravel, limestone or run-of-quarry rock.

SYNTRON Feeders are durable, constructed to withstand heavy load impact and excessive wear by abrasion. Powered by an electromagnetic principle that eliminates motors, gears, bearings and belts and assures dependable operation with low maintenance.

SYNTRON Feeders supply a smooth, uniform flow of materials to belt conveyors, crushers, screens, ball mills, and other process equipment. Rate of feed is instantly adjustable to meet production demands.

SYNTRON offers a wide range of Feeder Sizes and models with capacities from 1 to 3000 tons per hour. All with variable control of feed rate.

Let SYNTRON cut your materials handling cost and increase production.

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Other SYNTRON Equipment of proven dependable Quality



BIN
VIBRATORS



VIBRATING
FLOATS



VIBRATING
SCREENS

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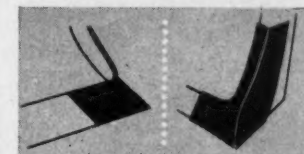


Don't kid yourself! An extra half inch of wear on the cutting edge of your dirt-mover can cost you plenty! Wear that chews into the moldboard weakens it—especially around bolt holes. Then you may have to rebuild or even replace the whole works!

Renew or replace cutting edges and bits before moldboard wear starts. You'll be money ahead on repairs and 'way out front in dirt-moving efficiency.

ONLY THE BEST IS A BARGAIN!

Speaking of moving dirt, Allis-Chalmers really has the edge! Take dozers, for instance. Cutting edges and end bits are made of finest alloy steel, forged and electronically heat-treated in a process that deep-hardens working faces for extra-long wear, toughens the core to resist impact. For rock-doing or worse, Allis-Chalmers makes heavy-duty edges, end bits and wrap-around end bits.



The man from your Allis-Chalmers dealer knows all about moldboards—for a new machine or reconditioning one you own—and the edges he recommends are right. Whatever you need, get original-quality Allis-Chalmers parts—made for the machine, best for the job.



move ahead with
ALLIS-CHALMERS
power for a growing world

For more facts, circle No. 314

(Continued from preceding page)

vantage is it may seem, for when the weather is bad, the construction jobs are generally shut down.

Even though weather grounds the planes occasionally, they put in a lot of air time. The Tripacer had about 250 flying hours last year. The twin-engine Apache had about 200 hours. Because the planes are not large, they can normally land on an improvised strip on the job. Both planes need a runway at least a quarter of a mile long and 50 feet wide. Under good weather conditions, however, the pilot can set the plane down on a 24-foot-wide pavement—providing, of course, it isn't carrying 2-way traffic.

The single-engine Tripacer, which was bought in 1956, cost about \$9,000.

The price includes the radio and navigational equipment. The 4-place plane has a 150-hp engine and a cruising speed of 120 mph. It flies at elevations ranging from 1,500 to 6,700 feet and can stay aloft for four hours.

The plane is equipped with a high-frequency transmitter and receiver, as well as a low-frequency receiver. An Omnigator allows the plane to "home in" on high-frequency stations.

Operating costs on the Tripacer are low. While in the air, the plane takes about \$3 worth of gas and oil each hour. Figured on a mileage basis, the gas consumption is about the same as that for an automobile—15 miles per gallon. Hangar rental at the municipal airport runs to a dollar a day. Insurance is high—about \$500 a year.

Actually, the plane is owned by the general superintendent, who rents it to the company for \$13.50 an hour. According to Beyer, it's a good light plane for hopping in and out of construction projects.

Apache is more airplane

Claude Weymouth, the president, makes his trips in the Piper PA23 Apache. With two engines holding him up in the air, he feels a lot safer. It also makes him feel better to have the plane wrapped in aluminum rather than canvas. The Apache is a bigger, safer, and more expensive plane.

Including the radio equipment and accessories, the 1955 model cost about \$35,000. The 5-passenger plane is powered by two 150-hp motors and cruises at a speed of 170 mph. It carries the same radio equipment as the Tripacer, plus an ADF radio for "homing in" on low-frequency stations. The Apache needs at least 1,400 feet of runway to set it down on. It can stay aloft for 6 hours.

The Apache and the Tripacer represent big investments for Weymouth Construction Co., but the firm feels that both planes have paid their way. They make it possible for Weymouth not only to save money, but also to make money through more efficient management of scattered projects. Every time one of the company planes takes off, it is helping Weymouth to make a strong showing on the black side of the ledger.

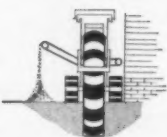
THE END

THE MACHINE / for distribution digging

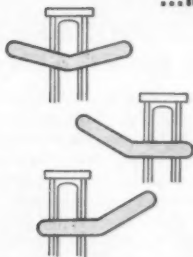


...the new Cleveland J-20 trencher

- less than 5' wide over its crawlers
- digs 13" to 24" wide, down to 5' 6" deep
- puts 24" trench within 20 inches of a parallel wall
- maneuverable full crawler mounting... perfect balance and stability, easy on lawns and sidewalks
- fast, accurate, clean, dependable... nothing digs trench like a Cleveland



Cleveland's unique new V conveyor ...hydraulically shifted...independently driven



- digs past poles, trees, shrubs... places spoil where needed — without interrupting other operations
- lever at operator's seat controls hydraulic shifting and positioning of conveyor
- dual independent hydraulic drive gives operator fingertip control of conveyor belt direction and speed — independent of all other operations
- self-contained hydraulic motor and planetary gear drives in each head pulley eliminate all conveyor chains and sprockets
- provides constant elevating angle for faster, higher spoil discharge
- Maximum clearance under digging wheel rims permits higher heaped loads without clogging
- conveyor design reduces rolling and tumbling

world's finest trencher crawlers

... double flanged sprockets, rollers, wheels... drives on each end of 1 1/2" diameter hardened pins... sealed ball and roller bearings... 1,000 hour lubrication... a tremendously long-lived, easy-rolling track.



hydraulic crumbing shoe

... optional, extra... pivots upward... fingertip control makes crumbing shoe advantageous in crowded digging conditions.



engine • crawlers • hoist • wheel
crumbing shoe • conveyor speed-direction-shift / Every operation
controlled at operator's seat

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO



For more facts, use Request Card at page 18 and circle No. 315

HRB report discusses subsurface drainage

Bulletin 209 from the Highway Research Board is a report on "Subsurface Drainage of Highways and Airports." Among the factors discussed are climate; soil and ground water investigation; capillarity and permeability; road location; surface drainage; subsurface, interception, and water-table drains; drainage of granular bases; economics; underdrain construction; and underdrain failures.

Appendixes detail a test method for determining saturated capillary height of soil, and suggested test methods for the coefficient of the permeability of soils with values less than and greater than 1 foot per day.

The 21-page bulletin may be purchased for 50 cents from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Air Reduction builds test laboratory

A test laboratory for Air Reduction Co., Inc., New York City, is under construction in Franklin Township, N. J. Designed to supplement the facilities of Airco's Central Research Laboratories at nearby Murray Hill, the new laboratory will be devoted to research on fuels and oxidizers, and will provide facilities for laboratory, prepilot and pilot scale operations.

Wigton-Abbott Corp., engineers and constructors of Plainfield, N. J., expect to complete the structure by late summer.

A-C picture booklet tells capsule story of firm

"Better Tomorrows Begin Today at Allis-Chalmers" is the title of a new 32-page booklet from Allis-Chalmers Mfg. Co. In colored picture panels with descriptive text, it presents the history of the firm, the facilities and products made in each of the company's works, and economic and social benefits for its employees.

The booklet gives capsule facts about road-building machinery, power-generating equipment, and all of the other A-C products.

Copies of the bulletin may be obtained from the Industrial News Bureau, Publications & Industrial Press Dept., Allis-Chalmers Mfg. Co., Box 512, Milwaukee 1, Wis.

Grace ASPHALT AND COMPACTION EQUIPMENT



Roadsweepers,



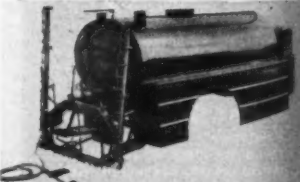
Sheepfoot rollers



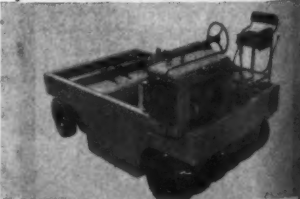
Chip spreaders



Circulating asphalt heaters



Asphalt Distributors



Pneumatic rollers, self-propelled or trailed

W. E. GRACE MFG. CO.

6093 So. Lamar St. • Dallas 15, Texas
For more facts, circle No. 316

CONTRACTORS AND ENGINEERS

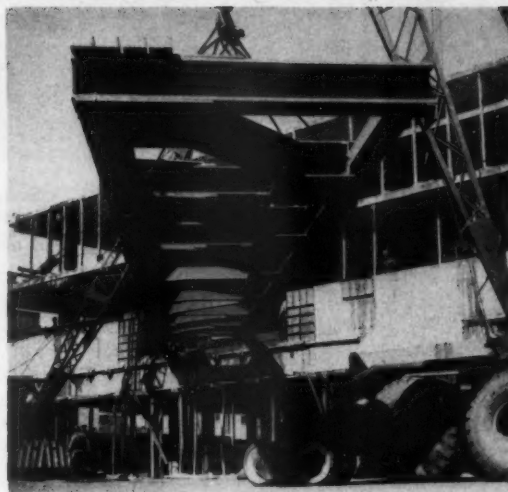
BPR bulletin presents 1957 highway statistics

The Bureau of Public Roads has published a new 200-page bulletin, "Highway Statistics, 1957." The bulletin is thirteenth in the annual series presenting statistical and analytical tables of general interest on motor fuel, motor vehicles, highway user taxation, state and local highway financing, road and street mileage, and federal aid for highways.

Included this year are special tables on state provisions regarding motor-fuel taxation, motor-vehicle registrations, and operators' licenses.

Priced at \$1.25, the bulletin may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

TWO TRUCK CRANES EASE A STEEL TRUSS into place between the second and third floors of the Denver Hilton Hotel. Rollers were used to slide the 38-ton truss into the building where a derrick completed the lift to the third floor. Steel is being erected by U. S. Steel's American Bridge Division. This truss and three others will hold up the roof of the mezzanine ballroom, which will have some 12,000 square feet of uninterrupted floor space. The trusses will also support two additional stories of the Denver, Colo., hotel.



Perma-Vane rotor blades

make the

DAVEY Hydrovane Rotary 600

today's best big compressor investment!



Davey 600 on bridge pile driving job for H. J. Happel Co., Tulsa.

Tired of blade troubles?

Then, make your next compressor a Davey!

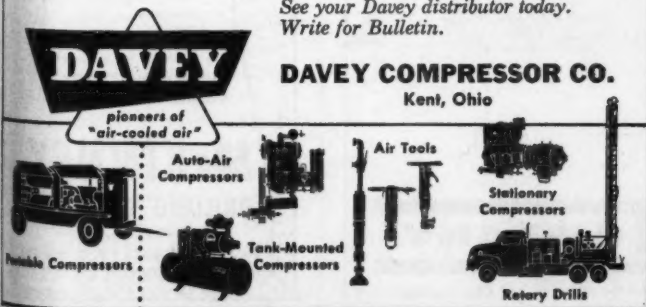
For, Davey's new Perma-Vane blades have greater wear resistance . . . are free from deterioration and breakage . . . eliminate the biggest single source of rotary compressor trouble . . . last longer. Because they're lightweight and "friction-free", Perma-Vanes also require less engine power, reduce fuel costs.

Remember, too, Davey Hydrovane Rotary Compressors are completely free from complicated pipes, pulleys, tubing or plumbing. They actually have 50% fewer working parts than most other rotary compressors . . . are easy to maintain and service!

A-70A

See your Davey distributor today.
Write for Bulletin.

DAVEY COMPRESSOR CO.
Kent, Ohio



For more facts, use Request Card at page 18 and circle No. 317

Ground-water hydrology discussed in new book

A unified, comprehensive account of fundamental theory, as well as recent methods and problems encountered in the field, is presented in "Ground Water Hydrology," by David K. Todd. Also discussed is the future role of ground water as a major water-supply source in the United States.

Data is given on the various aspects of ground water: occurrence, movement, well hydraulics, water wells, levels and fluctuations, quality, basin-wide development, surface and subsurface investigations, artificial recharge, legal aspects, model studies and numerical analysis, and sea-water intrusion in coastal aquifers. A list of references concludes each chapter. Diagrams, formulas, graphs, and tables abound.

The \$10.75 book may be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Funk Mfg. expands plant

A new building has added over 13,000 square feet of floor space to the plant of Funk Mfg. Co., Coffeyville, Kans. The additional space will be used to enlarge the assembly area, provide an indoor, all-weather product-testing area, and house new machines the company has purchased.

The company makes power-transmission equipment for original equipment manufacturers.

Curtiss-Wright division names district manager

Edward C. Warsaw has been appointed district sales manager for the complete line of construction machinery produced by the South Bend Division, Curtiss-Wright Corp., South Bend, Ind. His territory includes Minnesota, Iowa, Wisconsin, Illinois, Indiana, and eastern Missouri.

Cenco buys Soiltest

Cenco Instruments Corp. has acquired Soiltest, Inc., Chicago, manufacturers of soil, concrete, and asphalt-testing instruments. Soiltest will be operated as a subsidiary under its present management.

how much for a mud overcoat?

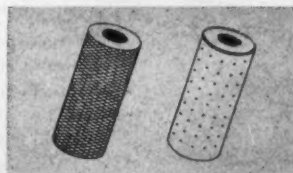


A thick mud overcoat on your tractor engine could cost you more than mink! Mud acts like insulation, impairs cooling of exposed surfaces—and you may be heading for an expensive overhaul. In any case, overheating steals power, spoils lube oil and cooks the life out of engines.

Hose the day's mud off. Clear away dirt or brush—especially around the engine and radiator. This not only helps cooling, it may also uncover trouble before it starts costing you money!

KEEP IT CLEAN INSIDE, TOO!

Efficient filter protection keeps Allis-Chalmers engines clean inside. Large fuel filters, full-flow oil filters and oil bath air cleaner with pre-cleaner are on guard against all kinds of sneaky, wear-causing dirt particles you might never see.



Help your engine live a long, healthy life. Service filters regularly and replace elements at recommended intervals. The service expert from your Allis-Chalmers dealer knows best replacement periods for any conditions. See him for genuine Allis-Chalmers replacement filters—made for the machine, best for the job.

move ahead with **ALLIS-CHALMERS** power for a growing world

For more facts, circle No. 318

Floating, jacking 80-ton frame into place is big part of . . .

Face lift on ferry slip

A gallows-frame assembly of structural steel and mechanical equipment, weighing about 80 tons, was recently floated into position during reconstruction work on a ferry slip in New York City. The unit, one of three for the three slips being rehabilitated,

supports the motors, drives, and sheaves used to raise, lower, and hold the movable ferry bridge.

The work, being done by the Mead-Morrison Division, McKiernan-Terry Corp., Harrison, N. J., for the New York City Department of Marine and

Aviation, is required to increase the passenger and vehicular load-carrying capacity of the ferry bridges.

Floated on towers

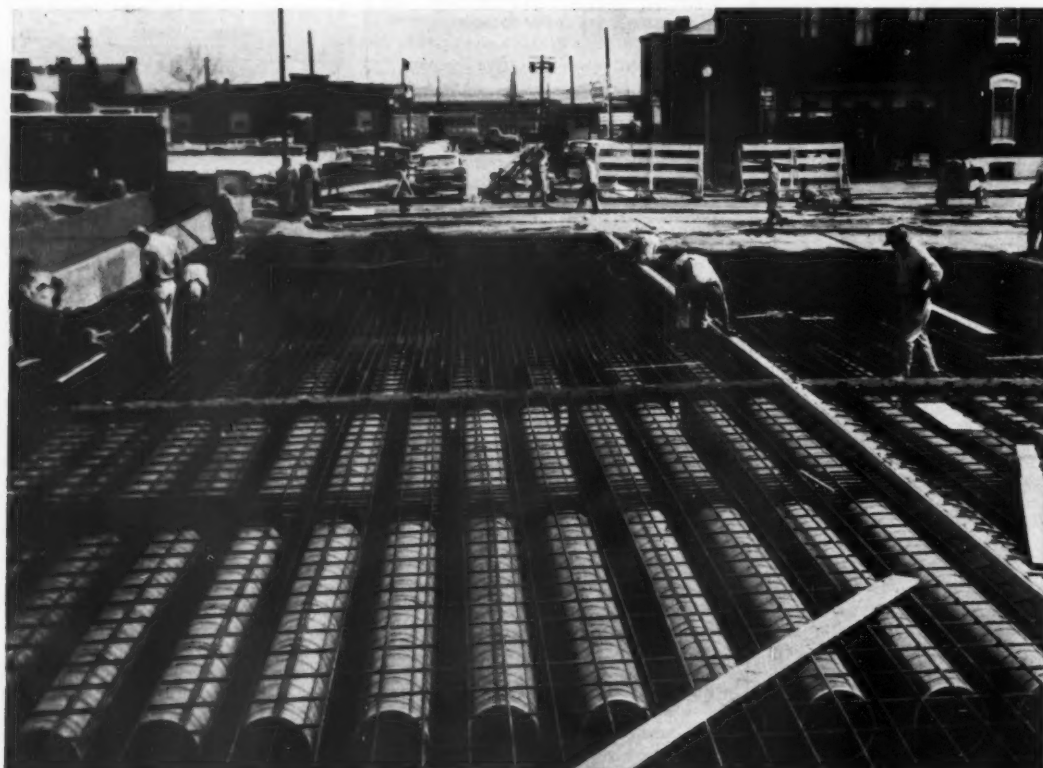
The 80-ton assembly was placed on a pair of barge-mounted 27-foot-high steel towers for the trip from the water-front fabricating site to the slip. A barge-mounted 150-ton derrick handled the lift. A towboat handled the transfer of the tower barge from the erection site to the ferry slip.

Here, manual labor and winches were used to line up the frame inside the existing slip building. The slow and exact positioning was necessary to align the four steel hangers, attached to the two girders of the frame, with the jacks located on the floor above. A link-type steel hanger was used at each of the four jacking points to connect the hydraulic Dudgeon 50-ton jacks with the gallows frame.

Jacking setups

The frame had to be jacked up about 19 feet to allow for construction of the two permanent steel towers that will support it. Once these towers are erected, the gallows frame will be lowered about a foot onto the towers.

In order to raise the frame 19 feet, with jacks having a maximum stroke of 18 inches, McKiernan-Terry set up special jacking frames so that the link-type hangers could be pinned in



saving concrete . . . reducing weight . . . maintaining strength with FIBRE TUBES and LACLEDE REINFORCING BARS

Millions of cubic yards of concrete are being poured into St. Louis' big new system of freeways—one of the most enterprising urban highway building programs in the country.

In this overpass section of the Mark Twain Expressway between downtown St. Louis and northwest suburbs, concrete and weight are both being saved without sacrifice of strength. 15 3/4"-diameter fibre tubes, incased in a grillwork of Laclede Multi-Rib Round Reinforcing Bars, form the core of the 24 1/2"-thick deck. While volume and mass are substantially reduced, the Laclede-reinforced deck maintains full load-bearing capacity.



MISSOURI HIGHWAY DEPARTMENT
Project No. 1-70-5(23)242
Mark Twain Expressway, St. Louis Ave. Bridge
Contractor: Fred Weber Contractor, Inc.

SAINT LOUIS, MISSOURI

LACLEDE STEEL COMPANY

Producers of Steel for Industry and Construction

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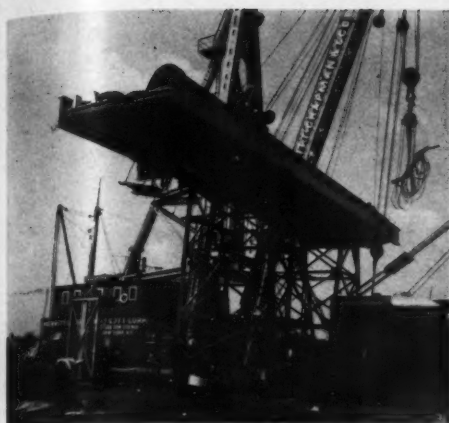
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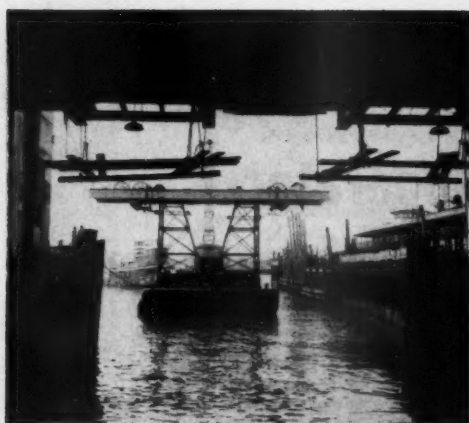
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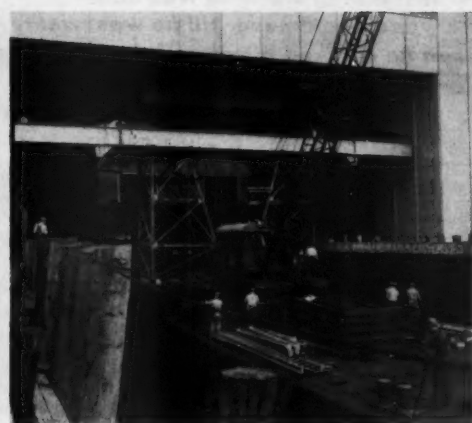
CONTRACTORS AND ENGINEERS



At the fabrication site, an 80-ton gallow's-frame assembly for a New York ferry slip rests on barge-mounted towers. The unit supports equipment that operates the



movable bridge at the slip. A tug pushes the barge to the slip, and side lines, together with winches and block and tackle, are used to inch the barge forward. Steel



hangers attached to the gallow's-frame girders are aligned with the link-type steel extensions from four hydraulic jacks on the floor above.

about 15-inch intervals as jacking progressed. In this way, all shoring was eliminated and accurate jacking was maintained.

This method was devised to expedite the progress of the work, as very limited head room makes the erection of machinery after erection of the gallow's frame a time-consuming task.

Personnel

John C. Smaltz is the consulting engineer and Lewis A. Boore, the construction manager for the McKiernan-Terry Corp. THE END

Free guidebook on paving for inspectors, supers

A "Guide to Successful Street Paving," published by the Portland Cement Association, is designed for the paving inspector and superintendent on concrete city-street construction projects. Important features of the job that must be carefully checked to insure satisfactory pavement performance are discussed and illustrated.

Topics discussed are specifications, subgrade preparation, forms, fine-grading, paving with quality concrete, joints, curbs, curb and gutter, curing, sealing, and opening to traffic.

The pocket-size booklet is available free in the U. S. and Canada from the PCA, 33 W. Grand Ave., Chicago 10, Ill.

Warner & Swasey Co. builds research center

A 12-acre site in Solon, Ohio, is the location of a new research center being built for The Warner & Swasey Co., Cleveland. The facilities will contain 40,000 square feet of floor space for offices, research laboratories, a library, design and experimental areas, a fully equipped prototype shop, and a high-bay general test section with overhead cranes and other heavy handling equipment.

The purpose of the new facility is to centralize the company's research and development activities and personnel. Construction is scheduled to be completed by the end of this year, with dedication in 1960 at the time of the firm's 80th anniversary.

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NEW MODEL 410

10 TON CAPACITY RANGE

- 11' 1" overhead clearance
- Hydraulic topping
- All-wheel drive
- Torque converter
- Continuous 360° boom rotation
- Boom raises to 60° from horizontal
- Short 15' 8" turning radius, 17' 8" w/outriggers
- 25' telescoping boom can be extended to 47'
- Power booster front-steer
- Full hydraulic rear steer
- Hydraulic outriggers
- Gas or diesel power
- Self-propelled; speeds to 23 mph plus
- Unobstructed visibility
- 10', 22' manual boom extensions

NEW MODEL 110

3-5 TON CAPACITY RANGE

- Low 8' 10" overhead clearance
- Hydraulic cable hoist
- Boom swings 220°
- Torque converter
- Power booster steer
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- Full reverse transmission
- Dual front driving wheels
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- Boom raises to 50° from horizontal

Available with wide range of accessories for added versatility!

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For more facts, use Request Card at page 18 and circle No. 321

**He lost his leg when he was nine—
He was a bookkeeper till he was twenty—
Then he chucked his office job to become**

Roy Beal—top operator

If you want to find out what makes a top tractor operator, don't try talking to Roy Beal, a one-legged cat-skinner with 31 years of experience. Roy isn't much of a guy to talk. But Guy Blunck, dirt foreman for Grady Construction Co., Le Mars, Iowa, will vouch for Roy's being the best operator the company has. Roy does all the finish work.

Roy and Blunck have worked together for a number of years; before hooking up with the Grady outfit, they worked for Shirley Construction Co., out of Omaha, and in those years there were plenty of hardships, plenty of laughs, and plenty of variety in their work.

Probably the most unusual job was caused by the big blizzard of 1949 that snowed in Nebraska farmers. Snow practically covered the houses, and the temperature was down to 20 below. Roads were blocked. Farmers couldn't get any food, or any oil for their stoves. Half their cattle were dead, and the other half were starving to death.

The state asked the contractors to lend a hand, and the dozers moved off to dig them out. Roy wouldn't be left behind. His D8 was going, and he was going with it.

So Roy was with the rest of the crew when they dozed out the roads and cleared out around the farms. The dozers pushed the haystacks from the fields right to where the cattle could get at the feed. When Roy got off his dozer and started across the snow to a farmhouse, sometimes his crutch dropped through the hard crust, and he'd go flat on his face. The farmers looked a little sorry for him, but the other operators just laughed. They threatened to put an empty oil can on the bottom of his crutch to make a sort of snowshoe, but they never did get around to it.

That snow was deep. Once, a farmer asked him to doze down about 20 feet into a big drift. When Roy asked why, the farmer said, "Well, I'd kind of like to get down to where I could oil my windmill."

Top operator

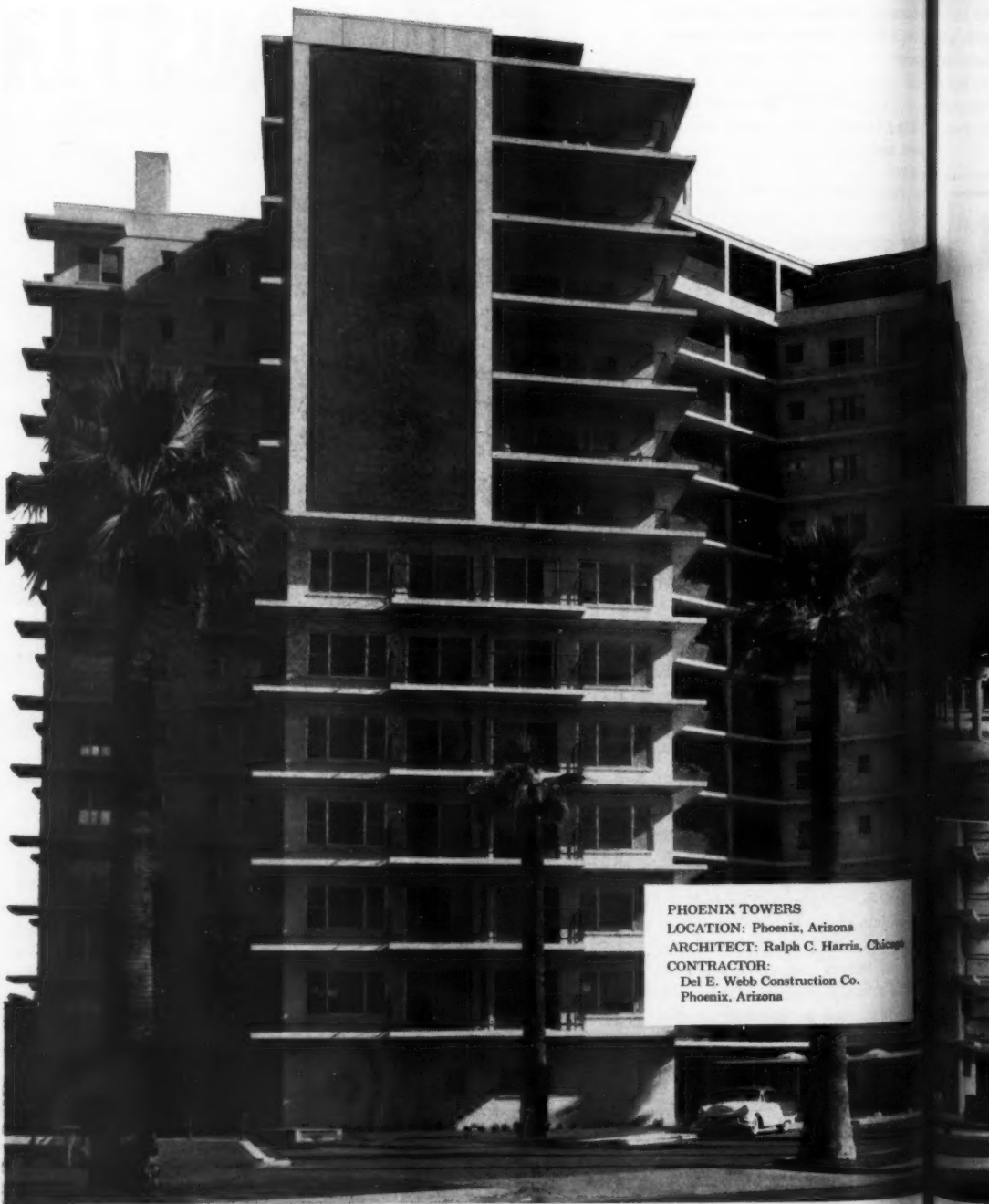
Normally, Roy Beal doesn't have much time for telling stories. For ten hours a day, six and sometimes seven days a week, he's on his dozer spreading the fill or finishing up the slopes on a road job. At the age of 51, there's nothing he enjoys more than mounting his dozer to start the day's work.

On his dozer he carries his one taped-up old crutch. This gets him around when his tracks aren't under him. Roy's a big man—over six feet. He's a strong man, and the strength

Catskinner for 31 years, Roy Beal takes a break with his partner, an Allis-Chalmers HD-11, during grading operations on Interstate 35 north of Des Moines, Iowa. Beal, who uses a crutch when he's not on the tracks, handles all finish grading for Grady Construction Co., Le Mars, Iowa.



Phoenix Towers apartment demonstrates **Three** **of fir plywood**



PHOENIX TOWERS
LOCATION: Phoenix, Arizona
ARCHITECT: Ralph C. Harris, Chicago
CONTRACTOR:
Del E. Webb Construction Co.
Phoenix, Arizona



The 51-year-old catskinner, who climbed on a tractor when he was about 20 and has been there ever since, says he'll keep on bulldozing till he falls off the rig.

shows even in his face. His eyes have a willingness to please. And about his broad mouth and jutting chin, there's a tenacity that borders on stubbornness.

Roy lost his leg many years ago. When he was nine, a horse stepped on his foot, and blood poisoning set in. The doc started sawing. After six amputations, the poisoning was checked, but there wasn't much left of the leg.

After being graduated from high school in Benton, Iowa, Roy thought he'd better get some more book learning. He figured that a man with one leg should equip himself a little better than the next guy. He spent a year studying at the American Institute of Business in Des Moines. Then he got a job as a bookkeeper. It was inside

work and pretty dull. The most exercise he got was erasing his own mistakes. Finally he said, "To hell with it. Somehow, I'm going to get me a man's job."

New start

He was about twenty at the time. Construction work had always fascinated him, so one day he knocked on the door of Al Stephens Construction Co. in Diagonal, Iowa. Roy convinced the boss that he could learn to operate one of the company's new Caterpillar Model 60 tractors. It wasn't long before Roy's one leg was doing the job of two, and he could operate the Model 60 with the best of them.

Since that time, Roy has sat behind the controls of many different tractor models. During his 16 years with Shirley Construction Co., Omaha, he did most of his work on a D8 pulling an 80 scraper. He has never tried the faster, rubber-tire scrapers.

When Shirley Construction Co. went out of business a couple of years ago, Roy went to work for Grady Construction Co. Since Grady had mostly Allis-Chalmers equipment, Roy had to break in on an HD-11. "It's a good dozer," he says, "but they didn't design it with a one-legged operator in mind. The brake pedals are too far apart, and it's hard to get my foot from one to the other."

Close shave

In his 31 years of operating tractors and scrapers, Roy has run into a few surprises.

He remembers the time he was cutting through a steep bluff for a country road in Iowa. Roy was cutting downhill, with the scraper bowl almost coming over on top of him. In fact, the slope was so steep that the dirt from the bowl was spilling over into the tractor seat.

It was quite a thing to watch, and a group of people, including a news photographer, was superintending the operation. As it happened, they got a better show than they expected.

Roy was coming down the steep slope when the yoke of his scraper broke. Before the loaded scraper could crash down on him, Roy whirled the tractor off to one side. With the connecting cables snapping like shoestrings, the scraper went catapulting down the bank. The news photographer stood with his mouth open and his shutter closed as the scraper went by.

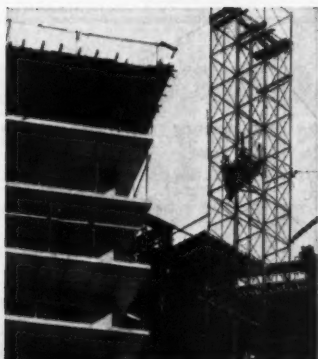
Roy's worn out many a dozer in the last thirty years, but he's still going strong. As for the future, he says, "I like my work, and I've never felt better. I'll just keep driving this old dozer till I fall off it." THE END

Barber-Greene promotes

L. G. Waddell has been named advertising manager of Barber-Greene Co., Aurora, Ill. He will be in charge of preparation of all advertising material and will be responsible for distributor contacts in regional magazine advertising, direct-mail material, and the distribution of product films. Waddell has been a member of B-G's Advertising Department.

Key advantages of concrete form panels

- time and labor savings
- economy through re-use
- smooth concrete surfaces



One floor was poured every two weeks, with plywood forms numbered and moved upward for each succeeding pour. Plywood was also used to form 120-car underground garage (left). Virtually no finishing was required before walls and ceilings were painted.



Confirmed again on this 14-story cooperative apartment—the fact that fir plywood concrete forms offer advantages unmatched by any other material. In building Phoenix Towers, Del E. Webb Construction Co. used over 25,000 square feet of PlyForm and Overlaid fir plywood. F. L. McDowell, job superintendent, reports that form fabrication, stripping, and moving was fast and easy. Rubbing and finishing time was cut to a minimum due to the smooth architectural surfaces made possible by plywood. Phoenix Towers offers 60 luxury apartments in four wings, each planned to provide a maximum view of surrounding mountains and desert.



DOUGLAS FIR PLYWOOD ASSOCIATION

TACOMA 2, WASHINGTON

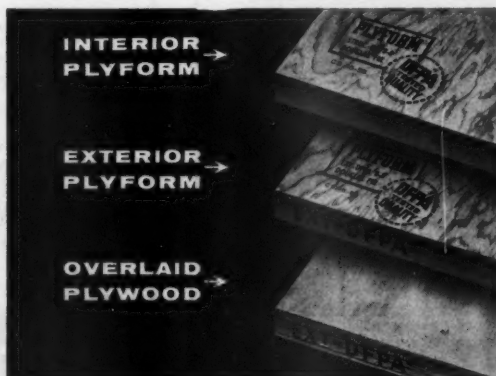
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OVERLAID PLYWOOD—special panel with hard, glossy, plastic-like fused resin fiber surfaces. Forms smoothest concrete; up to 200 re-uses.





Construction costs and time are slashed on a 3-span 120-foot twin bridge on the Austin-San Antonio expressway through the use of 38-foot-long deck pans. A chain that goes through a hole in the deck hooks onto the form for lowering.

King-sized steel pans simplify deck forming

The 38-foot-long pans are speedily set and stripped; a 40-foot-span deck is completed in three days

STOW MOTOR-IN-HEAD VIBRATOR... saves time, cuts costs easily carried, operated by one man



A Complete Line of Concrete Construction Equipment.



Vibrating Screeds



Grinders



Roto-Trowels



Vibrators

BINGHAMTON, N. Y. The versatile, lightweight, 60 cycle motor-in-head vibrator introduced last year by Stow Manufacturing Co. has proved to be one of the most popular in the line. Contractors like the way the STOW YU vibrates even the stiffest mixes; and they appreciate the way it saves money, down-time and labor costs . . . thanks to its one-man operation and its freedom from maintenance or fuel problems.

The heart of this vibrator is its Universal motor, completely sealed in the head which delivers 12,000 to 15,000 VPM. This high-frequency, low amplitude vibration penetrates farther, reduces voids with much less wear and tear on the forms. To change the head, simply snap it off, snap on a replacement.

Sturdy 4-ply neoprene encases the electric wires and serves as a handle. It is stiff enough to control the vibrating head, flexible enough to coil easily for carrying and storage.

The completely enclosed, water-tight on-off switch is conveniently located 7 feet from the head; a 25' electric cable plugs into any AC or DC outlet. The STOW YU is equipped with a thermostatic switch which shuts off the motor automatically in case of overheating or overload, re-starts it when safe.

Standard equipment on the STOW YU vibrator consists of a 25' vibrator head with a built-in Universal motor, rugged 4-ply neoprene casing, waterproof on-off switch, and a 25' electric cable. Casing is available in 7', 14', and 21' lengths for vibrators that weigh 25 lbs., 33 lbs., and 41 lbs. respectively.

For more information on this equipment, write for Stow Catalog 580 which gives complete data on STOW Vibrating Screeds, Vibrators, Roto-Trowels and Concrete Grinders.

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Texas-sized pan forms cut construction costs on a 3-span 120-foot twin bridge on the Austin-San Antonio expressway.

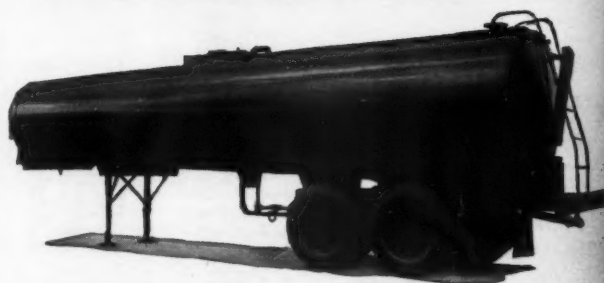
The 38-foot-long pans were easily stripped and swiftly set in position. No falsework was required, since the pans rested on timbers bolted to the pier caps. It took only 13 pans to form the 39½' x 40-foot deck.

The contractor, Dean Word Co., San Antonio, completed the spans at a fast pace. A crew of six men took

only three days to complete the deck of one 40-foot span. This time included taking the forms from one span, placing them on another, setting the steel, and placing the concrete.

Actually, the Texas State Highway Department, rather than the contractor, can take credit for the simplified method of forming. As early as 1948, the department designed bridges with 30-foot spans so that construction could be done with the long steel pans. In 1956, they went

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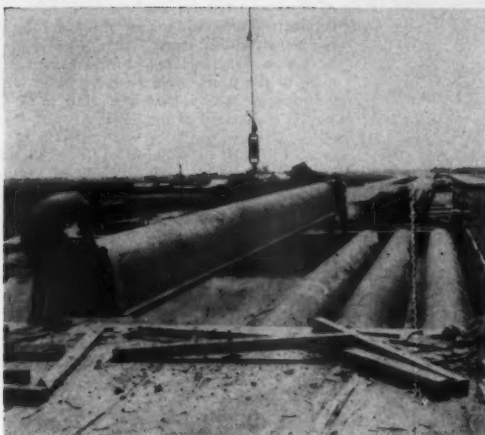
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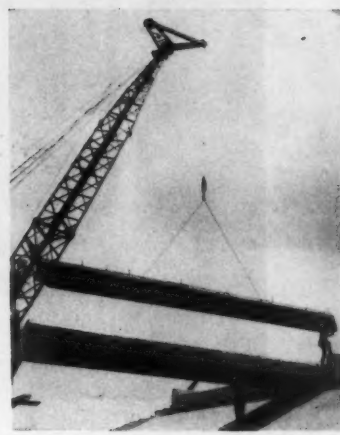
CONTRACTORS AND ENGINEERS



A 6-man crew takes only three days to strip and reposition forms for a new section. When all forms are lowered, a truck will drag them into place under the adjoining span of the twin bridge.



At each end, pans rest on a 4x6 slightly less than 3 feet long. The pans are 3 feet wide at the bottom, including the flange, and 30 inches deep. Steel cages, right background, are later lowered into the beam sections.



Pans are in place for another span, and a crane sets the special side plate. The plate will be tied to an identical plate on the other side of the span.

to a 40-foot span that has been equally successful.

The bridge built by the Dean Word Co. cost \$64,000. The twin structures carry the two lanes of U. S. 81 over a county road near New Braunfels, Texas. Each of the structures has three 40-foot spans that carry a 38-foot roadway bordered by two 9-inch curbs.

The pan bridge was actually a small part of the new construction on the Austin-San Antonio express-

way. Dean Word Co. had a \$1.4 million contract for the structures, grading, base, and bituminous surfacing of a 3.4-mile stretch near New Braunfels. Both the 2-lane divided highway and the frontage roads were built under the contract. In addition to this work, some 13 miles of construction was under way along different sections of the interstate highway.

Of the six twin bridges on Dean Word's contract, only one used the

pan-type construction. This structure, described by the superintendent as the "horse-trough" bridge, has pans or troughs, each measuring 38 feet in length. The cambered pans are 30 inches deep and 3 feet wide at the base, including the width of the bottom flange. They are made of 1/8-inch steel plate and when assembled give an 8-inch-wide beam. Manufactured by the Dixie Form & Steel Co., San Antonio, the sturdy forms are built to be used over and over.

Stripping the pans

The job of knocking the steel pans out from under the completed deck was a simple matter. After workmen pulled out the small wedges that held the edges of the pans together, 4x6 timbers supporting ends of the pans were unbolted from the sides of the pier caps.

While this was being done, a chain from a 1-yard crane was used to support the pan. The chain reached a hole in the pan through a hole

BOOST PRODUCTION...cut downtime with WISCONSIN-POWERED equipment!

POWER-FACTOR, a vibratory compactor made by Maginnis Power Tool Co., Mansfield, Ohio, assures uniform density in sub-base — cures mortar and concrete. This powerful lightweight relies on a single-cylinder ACN Wisconsin engine for power.



WOT OR COLD PATCH material is mixed on the job by the mobile patch mixer made by H. E. McConaughay, Lafayette, Ind. Featuring coil-type mixer-burner with fuel pump is powered by a 2-cylinder 16-hp Model 1N Wisconsin heavy-duty air-cooled engine.



AUTOMATIC CURING MACHINE, with adjustable spray head, sprays curing mixture over concrete surface in 10 p.m. Made by Chain Belt Co., Milwaukee, Wis., the unit is powered by a 2-cylinder 16-hp Model 1N Wisconsin heavy-duty air-cooled engine.



You pay for workhours — not manhours — when you use Wisconsin-powered equipment on your construction jobs. That's because Wisconsin engines minimize power shutdowns — keep men and machines busy around the clock, regardless of weather.

Wisconsin engines outwork and outlast other engines of their type and size. They start fast — deliver steady load-lugging power that shrugs off the effects of sudden shock loads.

Air-cooling cuts engine size and weight — eliminates up to 26 wear parts used on water-cooled engines. You don't have to worry about summer dry-ups or winter freeze-ups, anti-freeze, fan belts, clogged radiators, etc.

Leading builders include Wisconsin heavy-duty, air-cooled engines on their mechanized equipment by choice — not by chance. For the many dollars-and-sense benefits, specify Wisconsin engines on the equipment you buy. Sizes from 3 to 56 hp. All models can be equipped with electric starting. Write for Bulletin S-237.



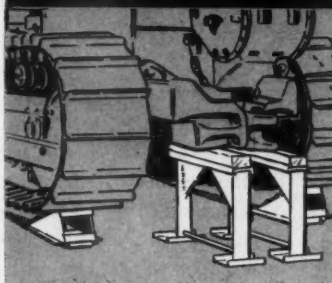
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World's Largest Builders of Heavy-Duty Air-Cooled Engines

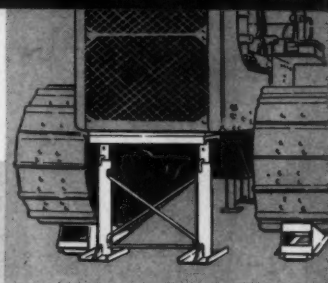
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TRACK JACKS

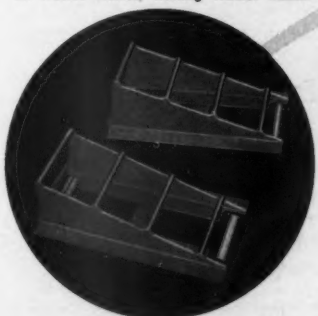
IN ONLY 5 MINUTES GET YOUR TRACK-TYPE TRACTOR UPON STANDS



RAISE REAR. Spot tractor on hard level surface. Center Track Jacks under each track, drawbar end first. Apply power to tractor in reverse, climbing jacks until tractor attains desired height. Place stands under drawbar or transmission case. Ease tractor forward until weight of tractor rests on tractor stands, freeing Tractor Jacks.



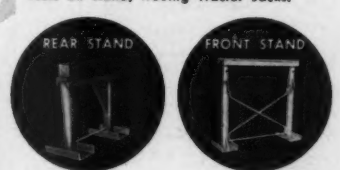
RAISE FRONT. Move Track Jacks under the front of tracks. Apply power in forward direction individually to each track pulling Track Jacks under tractor one at a time. After tractor has been lifted place front tractor stand under front end and reverse track direction individually until tractor rests on stand, freeing Tractor Jacks.



Track Jacks are all welded extra heavy construction, for raising all makes of track-type tractors to any height desired to place on stands.

Save up to two hours raising a tractor. Eliminate costly hydraulic jack repairs. Facilitates washing, painting and repairs. Check final drive noises quickly.

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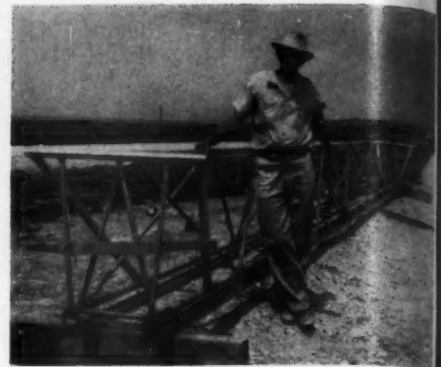
Rebuilders of broken or cracked Diesel Heads, Blocks and Transmission Cases for over 25 years. Write for catalog.

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A workman knocks out the wedges connecting the flanges of the pans before stripping starts. Note 4x6's bolted to the pier cap to support the ends of the pans. Also note the oak wedges on 4x6's that are used to adjust the height of the pans.

Ray Bynum, bridge foreman, stands beside the 40-foot-long all-aluminum screed used on the deck of the bridge. The lightweight screed, made by the contractor, has two 4-inch channels for screeding surfaces. Bolts tied to the channels allow the screed to be adjusted.



(Continued from preceding page)

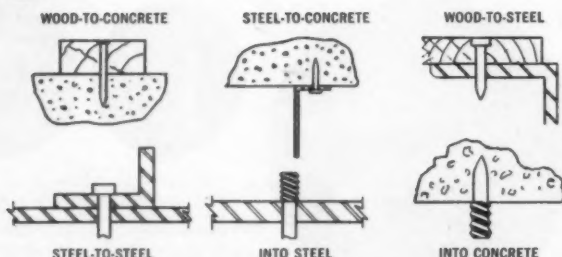
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**"covers all
the bases in
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This statement has been made by hundreds of contractors, architects, electricians, plumbers, maintenance men, supervisors, foremen and others over the past ten years! Whatever the job, if it involves fastening into concrete or steel Ramset can do it more easily, efficiently, and with a lower in-place fastener cost.

Threaded studs, drive pins, eye pins—over 100 specialized fasteners team with ten types of powder charges to assure you of just the right holding power for each job. It will pay you to get more details. Your Ramset dealer is listed in the Yellow Pages under tools... call him today!



In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Sel hammer-in tools for light fastening, and Ringblaster® heavy-duty kiln gun.

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formed in the concrete deck. With a little knocking, the pan broke free and the crane lowered it to the ground. The pan was then dragged by truck to a place where the crane could reach it to start the next span.

Setting pans goes fast

Before the pans could be set, 3-foot lengths of 4x6's were bolted to screw-type inserts in the sides of the pier caps. Each length of timber supported one end of one pan. Handling each pan from a hole at the center, the crane set the 13 pans side by side to form the span. The height of the pans was adjusted by wedges

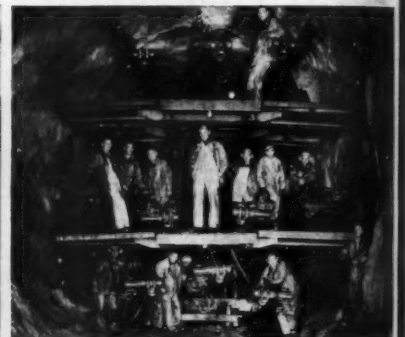
which were set to rest on the timbers.

Attached to the outside pans were steel form sections that formed the outside edge of the deck slab. These two sections were tied together across the tops of the pans with 1/2-inch rebars. Bolts, welded to the ends of the rebars, allowed the tie to be accurately adjusted.

After the bottoms of the pans were clipped together with wedge assemblies, the reinforcing steel was set. Steel in the beam sections was prefabricated in cages and set in place by crane. Deck steel was tied in place on the bridge.

Two cranes bucketed concrete to

JOINT CONTRACTORS: COKER-KIEWIT-CUNNINGHAM, Inc., SUPT. WM. W. ROBERTS



Construction ran months ahead of schedule on this 3-mile, 21 ft dia. Fremont power tunnel drilled thru hard granite, heavy with silica. Brunner & Lay 1 1/2" type H carbide Rok-Bits used exclusively.

40 ft dia 180' deep surge tank excavated by drilling the granite rock in 5 ft deep rounds using Brunner & Lay Rok-Bits. An average of 90 eight yd buckets of rock removed each day.



NO PLACE FOR BITS YOU HAVE TO "BABY"

Wyoming's Fremont Canyon Power project contractors use Brunner & Lay Rok-Bits 100%



Sharpened bits and steel are assembled in shop; loaded on steel cars which are hoisted up to serve chuck tenders. Result: no broken inserts, cost cut!

For details on this and other difficult, low-cost Brunner & Lay Rok-Bit drilling jobs, call your dealer, or our nearest plant. Request bulletin #358. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. 77 progressive years. Plants & conversion shops: Albuquerque, Asheville, Birmingham, Dallas, Denver, Dorchester (Boston), Los Angeles, Long Island City, Philadelphia, Portland, Sacramento, Seattle, Yardley (Spokane), Lachine, P.Q., Vancouver, B. C.

Brunner & Lay Products

CARBIDE ROK-BITS • INTRASET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & SECTIONAL STEEL
Standard or ROPE Thread • AIR TOOL ACCESSORIES—MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, etc.

For more facts, use Request Card at page 18 and circle No. 328

CONTRACTORS AND ENGINEERS

the forms from CMC mixers mounted on International trucks. After the mix was vibrated, it was screeded by a 40-foot all-aluminum screed. Designed and built by the contractor, the lightweight screed is made of an aluminum-pipe framework. The framework carries two 4-inch channels, separated by about two feet, which act as the screeding surfaces. Bolts, welded to the channels, permit the screed to be adjusted at 3-foot intervals. Because of its light weight, it can be carried by four men.

The 75 yards of concrete was placed in five hours; then the concrete was put under wet cotton mats for about six days. Counting the time taken to wreck the forms, the 6-man crew built the deck for one span in only three days. On the bridge, the contractor made use of 26 pans, or enough to form two spans.

Collars support cap forms

The forms for the caps of the 3-column piers required no support from the ground. Steel collars, bolted around the 30-inch-diameter columns, provided the support. Collar wings held two 10-inch H-beams, which carried the wooden forms for the pier cap.

Personnel

For the Texas Highway Department, F. M. Davis is the San Antonio district engineer, and R. E. Stotzer is the resident engineer. Pushing the job for Dean Word Co. were Bryan Carl, superintendent, and Ray Bynum, bridge foreman.

THE END

Study of vehicle drivers reported in HRB bulletin

Five papers are contained in Highway Research Board Bulletin 212, "Characteristics of Vehicle Operators." Topics discussed are driver characteristics and speed performance related to the facility; the role of psychological factors in motor-vehicle accidents; and relationships between driving records, selected personality characteristics, and biographical data of traffic offenders and nonoffenders.

The concluding papers cover age and fatal motor-vehicle accidents, and a final report on the effect of a periodic refreshment pause on simulated automobile driving performance efficiency. Charts and tables supplement the text.

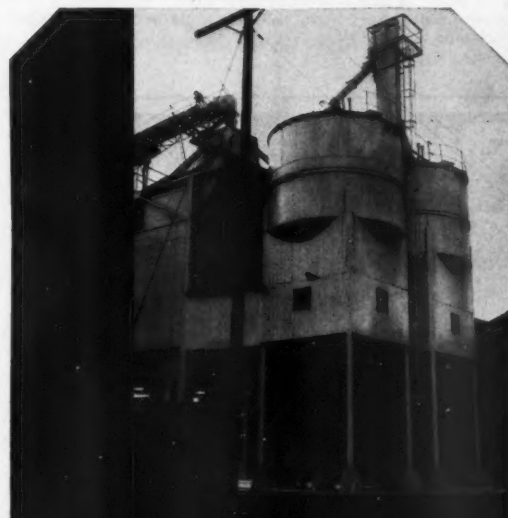
The 80-cent bulletin may be obtained from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Latin American post for Yale & Towne man

Donald L. Frazer has been promoted to factory representative for all of Latin America by Yale & Towne Mfg. Co., Philadelphia. He will work with company representatives throughout Latin America in the development and conduct of sales and service programs. Frazer was formerly the company's representative in Uruguay, handling the industrial truck line.



DITCH WORK AT GUATEMALA CITY is handled by a Gradall along the El Trebol (clover leaf), which has broken one of the worst bottlenecks on the Inter-American Highway. Prior to this construction, this crossing was used by more than 6,000 cars an hour, and some had to wait an hour to get through the traffic tangle.



Twin 1000-barrel Heltzel Cement Plants are partitioned into four compartments to handle up to four types of cement and fly ash. All compartments are loaded by a common elevator.

HELTZEL

twin two-stop
manual plant gives
ready-mix producer
speed, flexibility

By teaming two standard Heltzel batching plants Marion Ready Mix, a leading Pittsburgh concrete supplier, is able to get the high speed production they require during rush periods. Utilizing dual two-stop drive-throughs, four trucks can be handled simultaneously, and different mixes can be batched at the same time by a single batch crew.

Aside from the production advantages Marion is able to handle both plants with a single material handling system. One belt conveyor services all eight compartments of the two 400-ton aggregate plants through an eight-position rotary spout. The four compartments of the two 1000-barrel cement plants are fed by a single elevator through an ingenious system of flop gates. All batchers are controlled from one platform.

The results: Marion charged 30 trucks with aggregate and cement in 35 minutes. A six-yard (19,000 lbs.) aggregate batch was cycled in 45-seconds and a six-yard cement batch in 55-seconds. This from standard manual controls.

If you're not now getting this kind of plant performance why not contact your Heltzel representative for the last word in modern batching technique.

Write today for complete information.

THE HELTZEL STEEL FORM
AND IRON COMPANY

WARREN, OHIO



For more facts, circle No. 329->





A horizontal reservoir of Armco Multi-Plate pipe, following the contour of the mountainside, will provide over 725,000 gallons of water to a radar station on a 4,000-foot peak in the Santa Ana Mountains, Calif. A plastic coating, inside and outside, makes the structural-plate pipe watertight. The baffle atop the pipe will trap rain water.

Mountaintop reservoir of plastic-coated pipe

The problem of obtaining and storing water on a 4,000-foot mountain peak, which is too high for a pipeline and is inaccessible by tank truck, met with a unique solution: a horizontal reservoir of structural-plate pipe that follows the contour of the mountainside.

Wilson & Wilson, Los Angeles architects and engineers, came up with the solution while working on a proj-

ect for the medium-range radar traffic control center of the Marine Corps Air Station, El Toro, Calif. Water had to be supplied to a radar station on a mountain peak in the Santa Ana Mountains.

Plastic-covered pipe

Armco Multi-Plate pipe was used, the curved metal sections being transported in compact nested bundles. However, structural-plate pipe is not watertight at the joints. Wilson & Wilson found the answer through the use of plastics.

A special metal underprimer was applied on both the interior and exterior surfaces of the pipe. After this, a special grade of plastic sealant was pumped into all of the joints between the bolted metal sections and around all of the bolt heads.

The plastic sealant was then enclosed by a sprayed-on elastic vinyl membrane coating, which can best be described as a plastic sheeting suspended in liquid form. When the liquid coating was applied, a true plastic sheeting was deposited on the surface, directly over the joint areas and the bolt heads, forming a 6-inch-wide plastic membrane, approximately 1/8 to 40 mils thick, directly over the joint area. It tapered to zero thickness at a point approximately 2 to 3 inches on each side of the joint. After this, all the interior surfaces were coated with Secoton Hi-Build coating, which provided a continuous plastic coating throughout and yet had flexibility at those points where structural movements were anticipated.

The plastic sealant and the elastic membrane coating can expand and contract with movements which will occur in the pipe as a result of fluctuating temperatures.

Work on pipe

To trap the rain flowing down the mountain, the pipe has a baffle welded to the top. Water trapped between the baffle and the slope of the mountain filters into the pipe through a series of basket screens. The pipe then becomes a reservoir with a capacity of over 725,000 gallons. The dirt and debris behind the pipe is covered with cement to pocket the collected water.

The structural-plate pipe in the reservoir is 12-gage steel, 860 feet long and 120 inches in diameter. The pipe was erected as the sections were brought to the site.

Although the structure is a horizontal reservoir, there is a perceptible slope to the center, where the ground break is separated by bulkheads. At both ends are manholes and sand traps. A filtration building, located about 20 feet below the reservoir, will filter the water for domestic purposes.

INGRAM

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**OVER
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ENGINEERING EXPERIENCE
brings you a
**ROLLER geared
for...**

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- ECONOMY
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**FEATURING...
REVERS-O-MATIC
DRIVE**

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**INGRAM ROLLERS ARE
AVAILABLE IN ALL SIZES
TANDEM AND 3 WHEEL**

For more facts, use Request Card at page 18 and circle No. 330



Gritty mud would mar the markings on most tapes!

This Chrome Clad® tape is Lufkin's 50-foot ANCHOR model. It looks quality in its hand-sewn leather case... it is quality.

A special kind of electroplating protects the tape from the damage of mud, sand and grit. The bold black markings are bonded to the steel base... protected by layer after layer of electroplating... topped by a final coat of tough chromium. Glare free, corrosion resistant, longer lasting—this is the tape preferred by every professional. Available with markings in feet, tenths and hundredths.

THE LUFKIN RULE COMPANY
TAPES • RULES • PRECISION TOOLS

For more facts, use Request Card at page 18 and circle No. 331

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PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

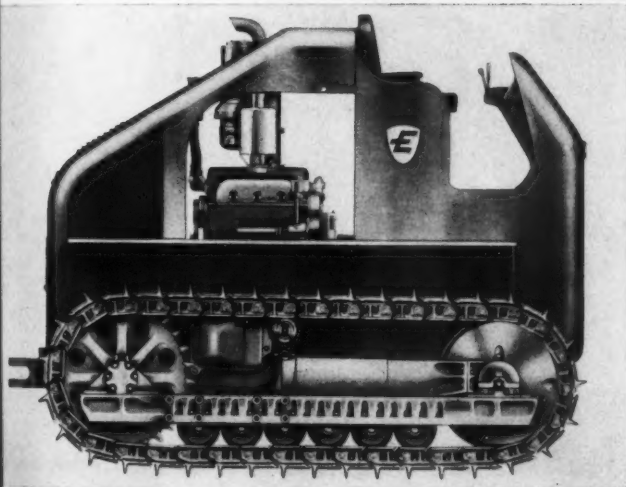
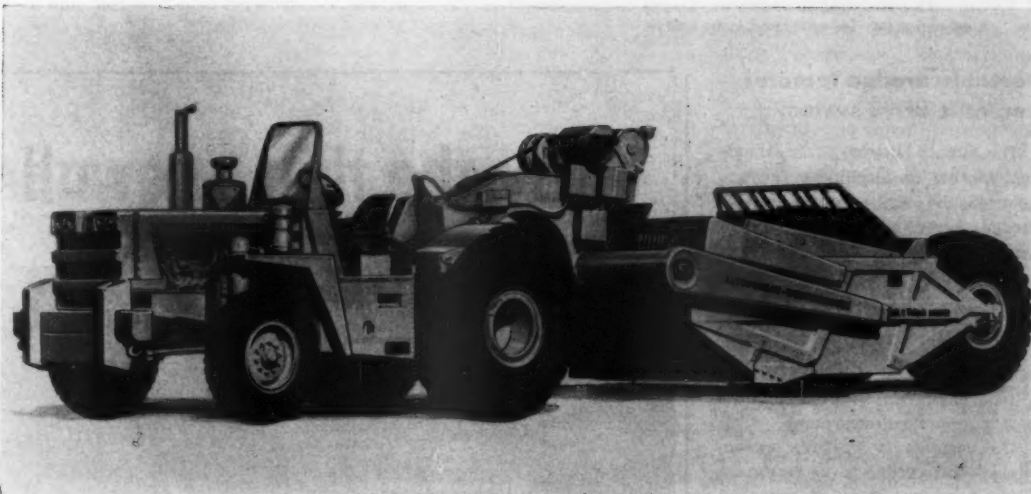
Scraper has 20-yard capacity

A new 6-wheel self-propelled scraper has been introduced by the LeTourneau-Westinghouse Co. Named the Model C Speedpull, the machine teams a 20-yard heaped-capacity Fullpak scraper with a 276-hp 4-wheel prime mover.

Designed specifically for long haul jobs, the unit features Hydrair suspension of its front wheels, a system that absorbs shocks and levels the ride.

The 41-foot 2-inch machine can turn a full 180 degrees in a space 34 feet wide.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 401 N.E. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 117.



Crawler tractor features 100-hp diesel engine

The Elmco Corp. offers the 103 Series tractor and line of attachments.

According to the manufacturer, the entire track frame and diagonal brace is cast of electric steel in one piece, smoothly molded to the shape and varying thicknesses as required, to withstand even abnormal stresses. The final drive, center housing, and main frame are also produced in one heavy steel casting, without bolts or welds.

Another feature of the 103 Series, Quadra-Torque, is described as a power team of heavy-duty torque converter and Elmco's Unidrive teamed with dual final drives, offering full hydraulic actuation on four forward and four reverse gears by the flip of a lever.

The 103 tractor is 11 feet 6 inches long, 7 feet 9 inches high, and 76 inches wide. Power is supplied by a GM or Cummins 100-hp diesel engine.

For further information write to The Elmco Corp., Dept. C&E, P. O. Box 300, Salt Lake City 10, Utah, or use the Request Card at page 18. Circle No. 119.



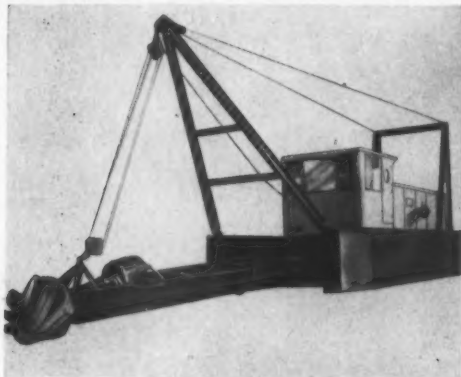
Tandem axle trucks to 38½ tons gvw

A new line of tandem-axle trucks designed to provide maximum payload and durability in ready-mix concrete and material-hauling operations is announced by The White Motor Co.

The trucks are offered in four model designations, gasoline or diesel-powered, from 35,000 to 75,000 pounds gvw. Standard transmission is 5-speed main with 3-speed auxiliary.

For power-takeoff applications, all models have adequate capacity for front engine drive, SAE side mount, extended counter loft, or mid-ship auxiliary and power tower installation, according to the manufacturer.

For further information write to The White Motor Co., Dept. C&E, 842 E. 79th St., Cleveland 1, Ohio, or use the Request Card at page 18. Circle No. 118.



A major feature on the Ammco Hydra-Drive portable dredge is the design of the drive system, said to give twice the power and to enable the dredge to be assembled and ready for operation in two days.

Portable dredge features versatile drive system

The Ammco Division of the American Marine & Machinery Co. announces the Hydra-Drive portable dredge. According to the manufacturer, this versatile new drive system gives twice the power, with variable-speed swing and cutter.

A ladder with removable sections is provided to give efficient digging at variable depths. If necessary, an additional engine can be installed in the field to drive the dredge pump.

The compact Hydra-Drive system enables this dredge to be easily assembled in two days. A complete fingertip-control system of all machinery is housed in an elevated control room, giving maximum vision of dredging operations.

These dredges are offered in 8 to 18-inch sizes on lease or sale basis.

For further information write to the Ammco Division, American Marine & Machinery Co., Dept. C&E, P. O. Box 1150, Nashville, Tenn., or use the Request Card at page 18. Circle No. 114.

Heavy-duty fork trucks handle materials in yard

Three heavy-capacity pneumatic-tire fork trucks for outside material-handling work over piers, unpaved yards, and similar areas have been introduced by Clark Equipment Co.'s Industrial Truck Division.

The trucks are the CY-60, with 6,000-pound capacity; the CY-70, with 7,000-pound capacity; and the CY-80, with 8,000-pound capacity. All three machines are powered by a 6-cylinder Continental gas or LP-gas engine of 244-cubic-inch displacement, coupled with a new 2-speed, full-power-shift transmission.

Directional controls (forward and reverse) and lift-tilt controls are mounted on the steering column within fingertip reach of the operator. A split hood over the engine provides complete accessibility for maintenance. All three trucks have a travel speed of 12 mph.

For further information write to the Industrial Truck Division, Clark Equipment Co., Dept. C&E, P. O. Box 31, Battle Creek, Mich., or use the card at page 18. Circle No. 52.

Three heavy-duty engines have wide application

Three new heavy-duty International engines, designed for a wide variety of power applications, are announced by the International Harvester Co.'s Construction Equipment Division.

The units consist of two compact 6-cylinder carbureted models—the UC-263 and the UC-221—and the 4-cylinder carbureted UC-135.

Most powerful of the three engines is the UC-263, which develops 95 maximum horsepower at 2,400 rpm. The UC-221 produces 75 maximum horsepower at 2,400 rpm, and the UC-

135 develops 42 maximum horsepower at 2,000 rpm.

These engines are dimensionally interchangeable with their diesel counterparts—the 95-hp UD-282 and the 75-hp UD-236. In fact, both new models have features associated with diesel engines.

For further information write to the International Harvester Co., Construction Equipment Division, Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 120.

Why the thin sidewall of a Beth-Cu-Loy



A 28-ft., 16-gage Beth-Cu-Loy sheet steel culvert demonstrates its ability to flex longitudinally. This illustrates how Beth-Cu-Loy drainage structures can easily be made to conform to curves and changes in grade.

Portable, stationary dust-collector units

Three new cyclone-type dust collectors, designed for operation with the complete range of B-G continuous-mix and batch-type asphalt plants, as well as with plants of other manufacturers, have been announced by the Barber-Greene Co. Each of the three sizes is available either as a portable or a stationary unit.

The three models range in capacity from 12,000 to 40,000 cubic feet of air per minute.

All models employ a multiple-cone collection principle for higher efficiency in eliminating the dust nu-

sance and recovering the valuable fines. The tightly sealed cyclones, of high-carbon steel plate, are jig-welded into banks of three cones. The Model CA-50 collector uses a single bank of three; the Model CA-60 uses two banks for a total of six cyclones; and the Model CA-70 employs three banks, totaling nine cyclones.

Each cone is fitted with a replaceable liner plate that is said to improve wear and abrasion resistance, and to permit easy renewal of the liner when worn.

Each portable collector model is equipped with fifth-wheel towing hitch, single-axle pneumatic-tire running gear, and extendable jackleg supports. The stationary models use a separate skid-mounted power unit and fan.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 44.

Portable auger drill digs 40 inches deep

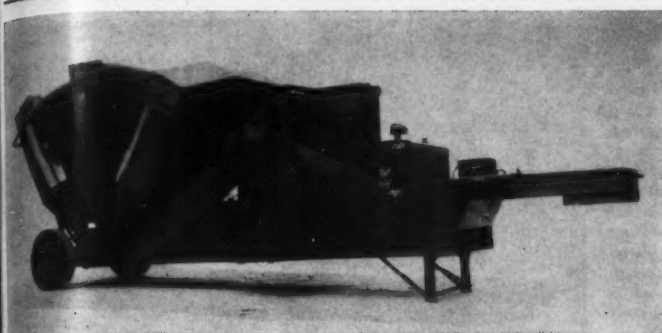
A new portable auger drill that digs a hole a minute in average soil has been placed on the market by J. R. Prewitt & Sons.

The new Prewitt portable auger drill weighs 525 pounds and has pneumatic tires and Timken-bearing-equipped wheels for easy moving from job to job. The feed screw and auger fold over during transportation.



The rig will bore holes 4 to 12 inches in diameter and up to 40 inches deep in most soils, according to the manufacturer. It is designed so that weight transfers to or from the auger cutter instantaneously with complete safety to the operator. Welded tubular framework reduces vibration during drilling, and the tilting digger makes it possible to drill vertical holes on slopes, hillsides, and uneven ground.

For further information write to J. R. Prewitt & Sons, Dept. R, Dept. C&E, Pleasant Hill, Mo., or use the Request Card at page 18. Circle No. 48.



A new Barber-Greene portable dust collector for asphalt plants.

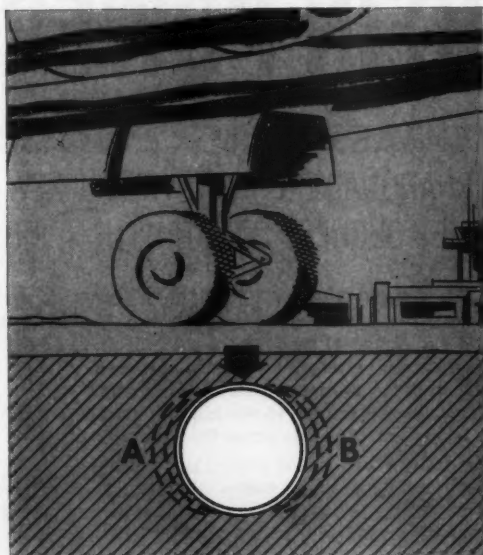
Cu-Luvert pipe is the secret of its strength

Looking head-on at a drainage structure made of galvanized corrugated Beth-Cu-Loy steel pipe, you might wonder how those thin sidewalls can support the load. Yet that very thinness makes Beth-Cu-Loy pipe one of its strongest advantages: flexibility.

Pipe made from Beth-Cu-Loy is flexible both transversely and longitudinally. Because of the way it flexes, easy curves in the line can be made without special fittings or connections. But its transverse flexibility is even more of an advantage.

Use of Surrounding Material

Because of this flexibility, a culvert or drainage structure made from Beth-Cu-Loy sheets can make use of the surrounding material to support imposed loads. In the drawing above, for example, the soil produces controlled deflection in the pipe. As points A and B move into and compact the trench walls, a load begins to develop around the pipe, spreading the pressures peripherally. This flexibility accounts in large part for the ability of corrugated steel pipe to carry the load. Unlike so with rigid pipe of the type used for drainage. It cannot flex with the load, thus can-



Exaggerated for clarity, this drawing shows action of Beth-Cu-Loy pipe under load. Pressure against fill, at points A and B, sets up counter-loads which largely offset the forces through the vertical axis.

not transfer a significant portion of the forces to the surrounding material. The bulk of the pressure is exerted through the vertical axis of the pipe.

Bethlehem furnishes galvanized corrugated Beth-Cu-Loy (copper-bearing steel) sheets to fabricators who make culvert pipe and other drainage structures. Beth-Cu-Loy meets the specs of the AASHTO. For full details, just get in touch with the nearest Bethlehem sales office, or write to the address shown here.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



For more facts, use Request Card at page 18 and circle No. 332

Product Parade

Complete lubricating unit for cone crushers

A complete, packaged lubricating unit designed primarily for the firm's cone crushers is offered by the Nordberg Mfg. Co. Called Protecto-Lube, the system is available with new units and can be adapted to crushing and processing equipment now in the field, as well as to many other types of mechanical equipment. Lubricant to the equipment is under constant, controllable pressure and temperature, and is filtered before returning to the oil circulating system.



Built in three sizes, the units are available for 10, 25, and 50-gpm output, with an available operating range of 20 per cent above and below this figure, based on 500 Seconds Saybolt Universal lubricating oil at 100 degrees F and 50-psi pump outlet pressure.

The temperature of return oil from the lubricated machine is automatically controlled. When temperatures exceed the safe range, a control light goes out and a warning horn sounds.

For further information write to the Nordberg Mfg. Co., Dept. C&E, 3073 S. Chase Ave., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 121.

Compound for bonding new concrete to old

A restoration compound for bonding new concrete to old is offered by the Coast Pro-Seal & Mfg. Co.

Known as Epoweld 812, it is said to permit the casting of thin layers of new concrete directly over the uncured material, with the assurance that the new concrete will not break away when cured, even when feathered.

The compound is an equal-part epoxy that resists corrosion, abrasion, and weathering, as well as acids, alkalis, and oils, and is unaffected by expansion and contraction. It may also be used as a pavement spall filler, corrosion-resistant coating, crack and fissure welding material, and a bonding material for metals, wood, brick, and masonry tile.

For further information write to the Coast Pro-Seal & Mfg. Co., Dept. C&E, 2235 Beverly Blvd., Los Angeles 57, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 68.

Maximum stability, extra capacity with ease of operation, and increased lifting height are features of the new line of cranes announced by the Heco Division of the Hardwicke-Etter Co. The unit shown is the Model RM-500, rated at 11 tons, with a 1/2-yard bucket. The cranes are rubber-mounted on a rugged carrier, which has solid H-beam frames and features 10-hole Budd interchangeable disk wheels, air brakes, 6-wheel drive, 32,000-pound rear axle, and an 11,000-pound front axle. The 40,000-pound rubber-mounted rear-axle suspension requires no greasing. For further information write to the Hardwicke-Etter Co., Heco Division, Dept. C&E, Sherman, Texas, or use the Request Card at page 18. Circle No. 88.



BIG IN CARRYING CAPACITY BIG IN POWER!

TANDEM-AXLE 230-SERIES

INTERNATIONAL TRUCKS GIVE YOU NEW WORKING MUSCLE ON THE TOUGHEST CONSTRUCTION JOBS!

Built for 60,000 lbs. GVW . . . up to 125,000 lbs. GCW! Here's brawn that extends from rugged channel iron bumper, to frame cut-off. Double channel, heat-treated side rails have a high combined section modulus of 25.74, use extra-heavy-duty cross-members for uncompromising frame strength under severest torsional stress. Axles up to 15,000 lbs. in front and 60,000 lbs. at rear take mammoth loads where there are no roads.

Power to match! Diesel engines up to 260 hp. (695 lb.-ft. of torque) are scientifically engineered with a range of four, five or 10-speed transmissions to give you a power train that assures optimum operation under all load and grade conditions. New power and muscle to tackle and handle all jobs, speed up "fill-in" and "carry-away" operations, make more money from more jobs . . . as sure as you're in the construction business!



Try 'em for all they're worth!

See your INTERNATIONAL Dealer about testing these tough looking, tough built 230-series INTERNATIONAL Trucks on your job, today!

Heavy-duty rock ripper offered in two models

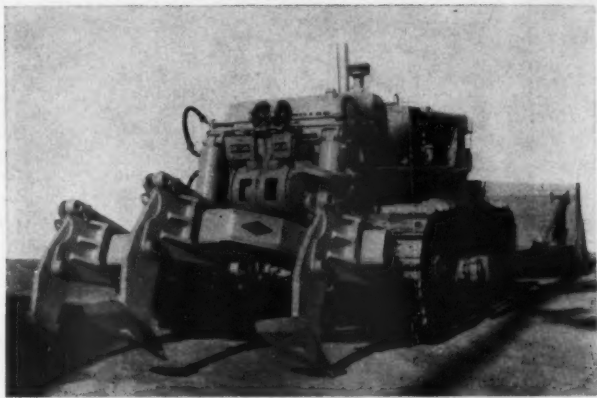
Designed specifically for Caterpillar D8 series H tractors, a heavy-duty rock ripper is now in production by the American Tractor Equipment Corp.

The new ripper is available in two models. Model HR48-D8H has an off-set tool beam with ample clearance for mounting on tractors equipped with No. 29 rear cable control. Model HR-D8H has the standard straight tool beam. Both models will rip with one, two, or three shanks to a maximum depth of 48 inches. Straight or curved shanks for 25, 42, or 48-inch ripping depths are available. Shanks

are equipped with replaceable points.

Features include a "beefed-up" tool beam 11x12 1/2 inches in section of 1 1/2-inch plate all around, box-welded and internally reinforced. Extra clearance under the tool beam is said to prevent clogging. Cylinders are 30 per cent larger, with 40 per cent heavier rods, than in previous D8 ripper models.

For further information write to the American Tractor Equipment Corp., Dept. C&E, 9131 San Leandro Blvd., Oakland 3, Calif., or use the Request Card at page 18. Circle No. 28.



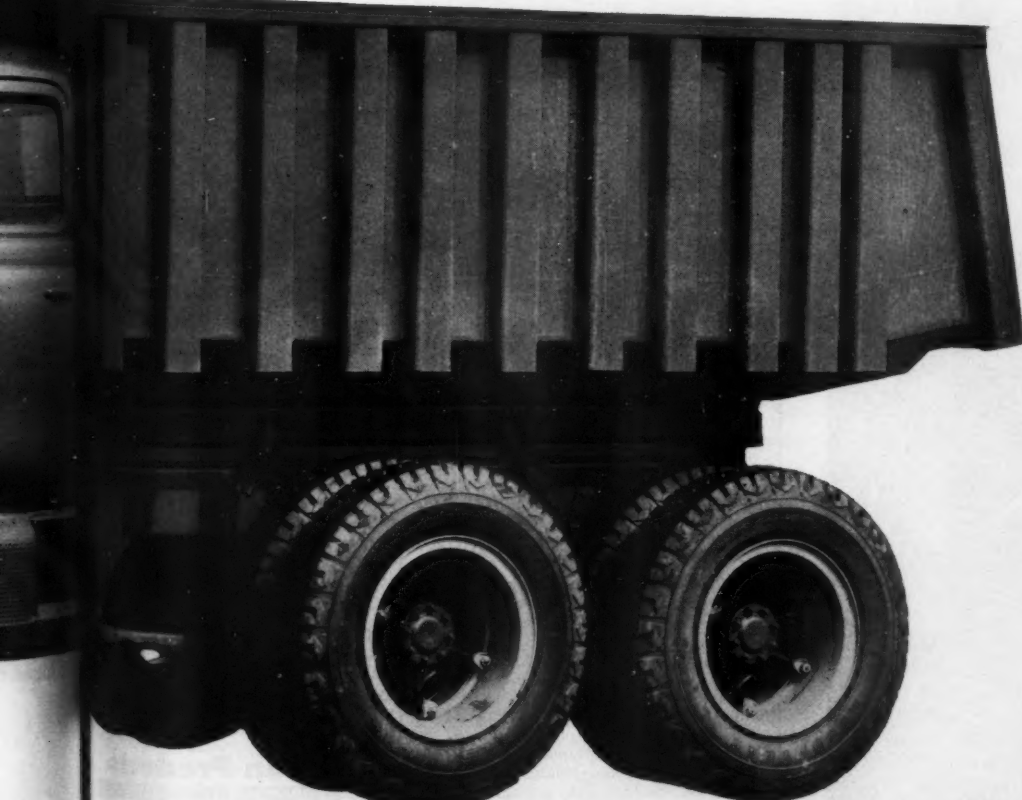
The new Ateco ripper works to a maximum depth of 48 inches with one, two, or three shanks.

INTERNATIONAL Dump Trucks
ready for immediate delivery!
Your INTERNATIONAL Dealer
can show you the many
features, bodies, hoists,
hoist reinforcements, etc. will
be shipped from INTERNATIONAL
Truck Sales Processing Center
3000 N. 1st St. after they receive order!

Model Series	RF-192	BCF-182	B-184	B-182	B-164
Gross Vehicle Rating	43,000	33,000	24,000	21,000	19,000
Body	8-10 Yd.	8 Yd.	4 Yd.	4 Yd.	4 Yd.
Wheelbase	157 in.	149 in.	141 in.	141 in.	129 in.
Engine	450 cu. in.	308 cu. in.	308 cu. in.	308 cu. in.	264 cu. in.
Transmission	5-speed Direct, 3-speed Auxiliary	5-speed Direct, 3-speed Auxiliary	5-speed Direct	5-speed Direct	4-speed Synchro-mesh
Rear Axle and Capacity	34,000 single- reduction tandem	28,000 single- reduction tandem	18,500 2-speed	16,000 2-speed	15,000 2-speed
Tires	9.00 x 20 10 ply	9.00 x 20 10 ply	10.00 x 20 12 ply	9.00 x 20 10 ply	8.25 x 20 10 ply
Frame Reinforcements	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"
Springs	Std.	Std.	Yes	Yes	Yes

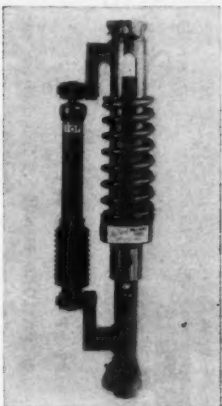
INTERNATIONAL® TRUCKS WORLD'S MOST COMPLETE LINE

International Harvester Co., Chicago • Motor Trucks • Crawler Tractors • Construction Equipment • McCormick® Farm Equipment and Farmall® Tractors



Offer moldboard shocks
for motor graders

Hi-Speed moldboard shocks are now being manufactured to fit all major motor graders, according to the Over-Lowe Co.



Graders equipped with these shocks reportedly can maintain roads at speeds up to 15 mph without damaging road surfaces, while damage to moldboards, circles, and arms is said to be eliminated. The shocks are quickly and easily installed.

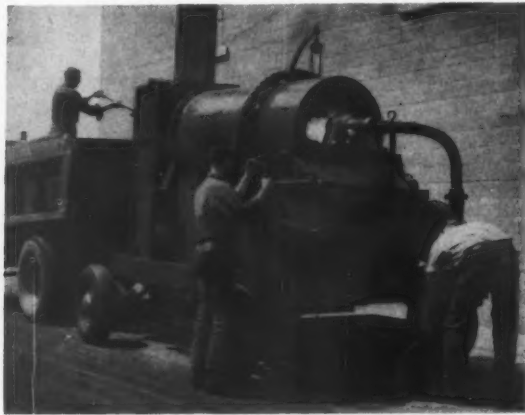
For further information write to the Over-Lowe Co., Dept. H, Dept. C&E, P. O. Box 2876, Denver 1, Colo., or use the Request Card at page 18. Circle No. 11.

Offer one-man vibrator
for heavy, harsh mixes

Vibro-Plus Products, Inc., announces a new one-man mass-concrete vibrator, the Model AO 32. According to the manufacturer, this unit is designed to knock down and compact the heavy, harsh mixes normally used in dams, large bridge piers, and similar jobs. It will consolidate concrete with aggregate sizes up to 10 and 12 inches in diameter.

The AO 32 weighs 70 pounds, has a head diameter of 6 inches, and an air consumption of 80 cfm at frequencies ranging from 7,000 to 8,000 vpm. There are only two moving parts, which are easily replaceable.

For further information write to Vibro-Plus Products, Inc., Dept. C&E, Stanhope, N. J., or use the Request Card at page 18. Circle No. 90.



The new White portable asphalt plant is rated at 6 to 8 tph when producing hot-mix.

Portable asphalt plant for patch, small jobs

The White Mfg. Co. has announced a new type of portable asphalt plant, designed to produce paving and patch material at the job site for road maintenance or specialty paving.

The Model L-6B is rated at 6 to 8 tph when producing 300-degree hot-mix. The capacity is said to be even greater when the unit is producing cutback or emulsion.

Power is supplied by a 30-hp gasoline engine. An asphalt heating tank and fuel supply are incorporated within the plant.

In operation, the pregraded aggregate is first dried in the 3x8-foot

rotary dryer and then batched in the 5-cubic-foot hopper. It is then discharged into the 500-pound pugmill mixer. At the same time, asphalt is pumped from the storage tank to a measuring trough and into the mixer.

The plant is available as a portable truck-towed unit or as a semipermanent installation utilizing a feeder and bucket elevator to charge the dryer.

For further information write to the White Mfg. Co., Dept. C&E, 1220 W. Beardsley Ave., Elkhart, Ind., or use the Request Card at page 18. Circle No. 59.

New vibrating screed ideal for narrow spans

Because of its light weight, the screed is easy to lift over any obstructions in its path as it is moved along the prestressed beam.



The Stow Mfg. Co. has available a lightweight vibrating screed said to be ideal for striking off narrow spans.

This Model DUS screed consists of a Stow DU vibrator with a 3/4-hp motor and 1 1/4-inch head mounted on an aluminum or steel channel with handles on each end. The 9,000 to 12,000 vibrations per minute are transmitted evenly throughout the beam directly to the concrete. Not only does this screed strike off the concrete, but it

vibrates it at the same time. When not in use as a screed, the vibrator can be unbolted and used for vibrating concrete in narrow forms.

The DUS screed is available in lengths of 4, 5, 6, and 7 feet.

For further information write to the Stow Mfg. Co., Dept. C&E, 40 Shear St., Binghamton, N. Y., or use the Request Card that is bound in page 18 of this issue. Circle No. 122.

NEWS ABOUT THE COAL HAULING BUSINESS

Marion Trailer Dumps Provide Triple Pay-Off For Saxton Coal Corporation

MARION
BODIES AND HOISTS

Here's how!

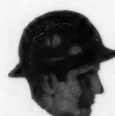
- **PAYLOAD BONUS**... This Indiana company put nine bigger (30 cu. yd.), lighter weight (with USS Cor-Ten steel) trailer dumps into operation, replacing nine 12-ton units... and hauling the same daily tonnage (2,000) of coal twice as far (from mine to tippie the distance is now 6 miles) at no increase in cost per ton mile.
- **PERFORMANCE BONUS**... These units have been in operation for two years, each making 9-10 round trips daily with an unusually small amount of downtime. (Marions are built to take it "under a shovel and under all hauling conditions.") A total of 7 other units of the same type have also been purchased for Saxton's operation. Big, rugged and fast front end telescopic hoists (model F-815-T-204) raise the bodies.
- **MAINTENANCE BONUS**... Marion engineering and manufacturing plus high strength steel provide long, maintenance-free life. Cor-Ten steel is highly resistant to atmospheric corrosion and has greater impact and fatigue strength.

Why not get complete information on Marion bodies and hoists. They're on-the-job designed with your profit in mind.

MARION METAL PRODUCTS CO.
Marion, Ohio



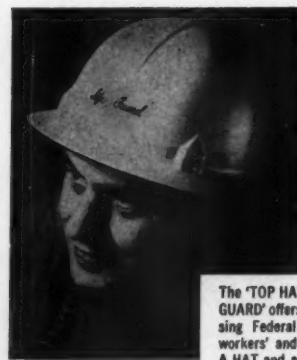
For more facts, use Request Card at page 18 and circle No. 334



Jackson FIBER GLASS HATS and CAPS surpass all Federal tests for construction workers' safety hats. In eight standard colors, others in quantities.



COMBINATIONS of Safety Caps available with welding helmets, goggles, face shields.



The 'TOP HAT' for Safety... Jackson's 'LIFE GUARD' offers unequalled protection by surpassing Federal Specifications for construction workers' and Edison Institute tests as well. A HAT and a CAP in white, yellow, and grey.



Jackson 'ALUMINAT' and 'ALUMICAP' comply with Federal Specifications and electrical resistance. Both in satin finished aluminum.

tops

• TOPS IN COMFORT

To men who wear safety hats all day long, comfort is important. Jackson hats and caps fit well and bear smoothly and evenly on the head.

See how little it takes to fit the headband to clearly marked hat sizes. And, being easy to fit, men will fit these hats accurately, so they stay on better in windy weather. Chin straps and winterliners are also available.

The polyethylene headband is smooth and flexible, yet firm enough to hold its shape. A soft-backed leatherette sweatband fits all around.

• TOPS IN STYLE

They protect without looking bulky and have a well designed, uncluttered look. Easy to clean, they keep their shiny, smooth finish.

• TOPS IN SAFETY

Thorough comparative testing against published industry-accepted standards proved that Jackson's three types of safety hats, each in its own class, offer an extra margin of safety. They should be your choice.

Jackson Products

31739 Mound Road, Warren, Michigan
Sold through Welding Supply and Safety Dealers

For more facts, use Request Card at page 18 and circle No. 335

CONTRACTORS AND ENGINEERS

A double-drum 48-inch sheepsfoot roller, normally pulled by a crawler tractor, can be efficiently handled by the Napco Crab. This is a result of combining the tractor's 4-wheel-drive traction with the advantages of its torque converter. The manufacturer points out that short turns are easily effected by the Napco machine, and its use in pulling roller attachments permits the contractor to release his crawler units for other applications. For further information write to the Construction Equipment Division, Napco Industries, Inc., Dept. C&E, 834 N. Seventh St., Minneapolis 11, Minn., or use the Request Card at page 18. Circle No. 93.



Flasher light has range of more than half a mile

The NXA Series Flashmaster is announced by the Carpenter Mfg. Co. According to the company, the multi-lensed neon lamp with 7-inch lenses, coupled with a rugged transistorized circuit, has a range well in excess of one-half mile.



The entire unit is encased with 18-gauge drawn steel, and a separate, sealed, and shock-mounted inner case protects the mechanism. The 12-volt battery has a continuous operating life of about 6 weeks.

For further information write to the Carpenter Mfg. Co., Dept. C&E, Bradley St., Somerville 45, Mass., or use the Request Card that is bound in at page 18 of this issue. Circle No. 92.

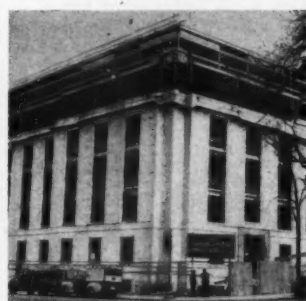
New road-marking gun operates at 25 mph

A new road-marking spray gun designed to put down highway striping at speeds up to 25 mph has been introduced by Binks Mfg. Co. Designated the Model 33 gun, it has a capacity of five gpm and will lay down a stripe up to 10 inches in width. Smaller-width stripes can be obtained by varying the distance of the gun from the highway.

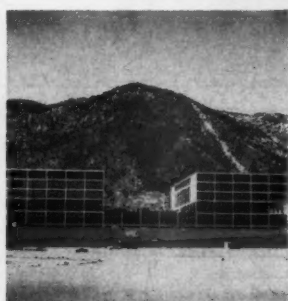
Designed specifically for road-marking materials, the gun is ruggedly constructed of heavy brass bar stock to withstand the rigors of everyday highway usage. Total dimensions are 10x2x2 inches.

In operation, the gun requires 15.5 cfm of 50 pounds air pressure, and 50 pounds material pressure.

For further information write to the Binks Mfg. Co., Dept. C&E, 3114 Carroll Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 91.



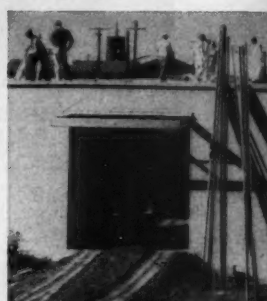
NEW SENATE OFFICE BUILDING
Washington, D. C.



U.S. AIR FORCE ACADEMY
Colorado Springs, Colo.



MISSOURI RIVER BRIDGE
St. Charles, Mo.



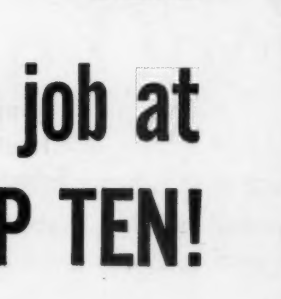
CHENNAULT AIR FORCE BASE
Lake Charles, La.



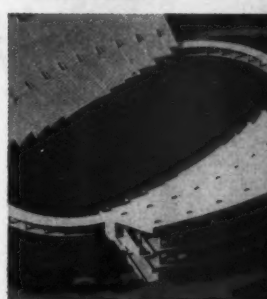
BISSONET PLAZA
New Orleans, La.



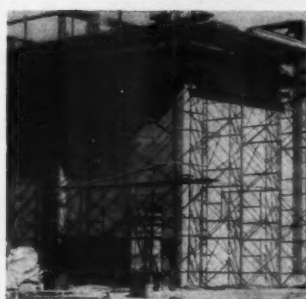
ROUTE #15 BYPASS
Amity Hall, Pennsylvania



CAPE CANAVERAL MISSILE
CENTER, Cocos, Florida



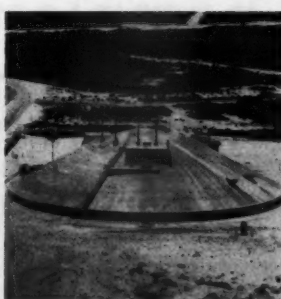
FOOTBALL STADIUM
Indiana University



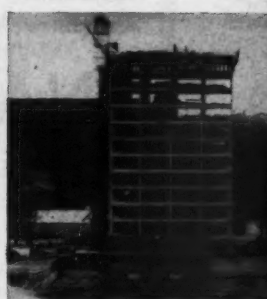
MINOT AIR BASE PROJECT
Minot, N. Dakota



ROUTE #15 BYPASS
Amity Hall, Pennsylvania



CAPE CANAVERAL MISSILE
CENTER, Cocos, Florida



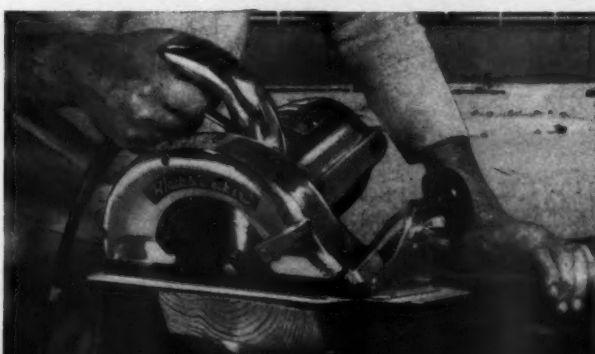
GLENWOOD REDEVELOPMENT
PROJECT, Minneapolis, Minn.

On the job at the TOP TEN!

America's top construction jobs pick world's toughest saw, Black & Decker

From coast to coast . . . under roughest field conditions . . . leading contractors and builders specify Black & Decker Saws. Why? For better control in the wood. For dependable operation.

*Courtesy Minneapolis Star & Tribune



For solid all-round performance and more board feet per day. Black & Decker Saws turn out the work fast with less downtime. A trial on the job will convince you! Write for free demonstration!

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Black & Decker
QUALITY ELECTRIC TOOLS



THE BLACK & DECKER MFG. CO., Dept. 1308
Towson 4, Md. (In Canada, Brockville, Ont.)

☐ Arrange a free demonstration of the world's toughest saws.
☐ Send additional information on _____

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

☐ Hammers ☐ Drills ☐ Impact Wrenches ☐ Jig Saws

For more facts, use coupon or circle No. 336--



This 110-ton crawler erecting crane, capable of handling up to 300 feet of boom, is being used to place concrete in a multiple housing development in lower east Manhattan. A P&H Model 1015, operated by the Knickerbocker Construction Co., it is equipped with a 1½-yard concrete bucket. According to the company, it places about 700 yards of concrete per day. For further information write to the **Harnischfeger Corp.**, Dept. C&E, 4400 W. National Ave., Milwaukee 46, Wis., or use the Request Card at page 18. Circle No. 77.



"It takes more than one strong point to make a champion."

Drop Forged
Heat Treated
Selected Steels

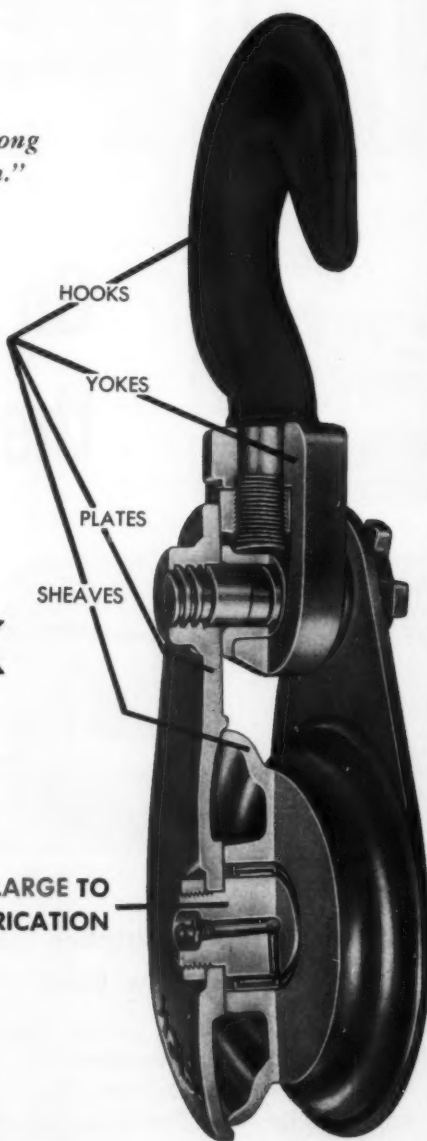
Champion SNATCH BLOCK

FEATURES EXTRA STRENGTH
AT ALL FOUR CRITICAL POINTS

CENTER PINS AND BEARINGS EXTRA LARGE TO
CARRY RATED LOADS—ALEMITE LUBRICATION

BE SPECIFIC
BUY McKISSICK!

The Best Snatch Block For Your Purpose . . .



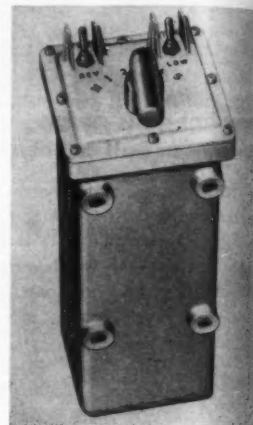
McKISSICK

McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

For more facts, use Request Card at page 18 and circle No. 337

New transmission control provided for Cat tractors

Effortless fingertip shifting of Caterpillar DW20 and DW21 tractors reportedly is provided by Synchro-Touch transmission control, offered as optional equipment by the Caterpillar Tractor Co. Manual-shift transmissions will continue to be available for the tractors.



A prime advantage of the new transmission control, states the manufacturer, is its feature of permitting operators to shift up or down instantly, by merely dialing a desired gear range.

The Synchro-Touch is controlled by a gear selector, located to the right of the operator at arm level. The selector is mounted on top of the control box and replaces the gear-shift lever. The standard clutch foot pedal is retained but is used only when the machine is started from a standstill.

For further information write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 85.

Loader-digger unit offers several features

A heavy-duty front-end loader and power digger that use a common sub-frame and are powered from a single Hydra-Loop hydraulic system permitting the operation of both units simultaneously are announced by Sherman Products, Inc.

The new loader has a breakout capacity at bucket lip of 5,000 pounds and a full lift capacity of 3,500 pounds. With the series 601 and 602 Ford and Fordson Dextra tractor, the loader has a breakout capacity of 4,000 pounds and a lift capacity of 2,000 pounds. The bucket lifts to 10 feet 6 inches and dumps at a maximum 8 feet 9 inches.

The digger has an uninterrupted pivot arc of 188 degrees, with a reach of 18 feet at grade and 12 feet below grade. Available digging force is 19,250 pounds from a hydraulic system rated at 15 gpm at 1,750 psi with an operating pressure of 2,000 pounds psi.

For further information write to Sherman Products, Inc., Dept. C&E, 3200 W. 14 Mile Road, Royal Oak, Mich., or use the Request Card that is bound in at page 18 of this issue. Circle No. 129.

CONTRACTORS AND ENGINEERS

Standard on the Dorsey bulk-cement transport Model BMC-T are 20,000-pound axles; 2-speed, vertical, removable landing gear; and 10-00x20, 12-ply tires.

Bulk-cement transport is self-unloading

A new self-unloading bulk-cement transport is available from Dorsey Trailers.

Designated Model BMC-T, the unit has three 20-inch fill hatches with watertight covers. Its twin-screw discharge system unloads at the rate of 5 barrels per minute. To dislodge lumps and prevent bridging over conveyor shields, the screws are reversible, and each has four air pads. Two-stage drives permit discharge of the rear portion of the load before front

screws are engaged.

The Model BMC-T is hydraulically powered through a tandem pump operated from the tractor power takeoff. With a 25-hp air-cooled engine, which is offered as optional equipment, it can operate with any tractor, the manufacturer states.

For further information write to Dorsey Trailers, Dept. C&E, Elba, Ala., or use the Request Card that is bound in at page 18 of this issue. Circle No. 80.



For more facts on these products, circle the indicated number on the Request Card at page 18.

Offer new concrete form for use on wing walls

A new steel wing-wall or stoop prehab form has been introduced by Symons Clamp & Mfg. Co. to complement its line of factory-built concrete forms and forming hardware.

The new form is triangular in shape and will form a concrete bracket 4 feet deep, extending 4 feet from the wall at the top. Thickness of the bracket is 8 inches at the wall, decreasing to 6 inches at its outer extremity.

Stoop forms are available for wood-ply or steel-ply forms and are used with regular standard Symons hardware. Handles are provided on each form for easy handling.

For further information write to the Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 34, Ill., or use the Request Card at page 18. Circle No. 38.



30' UP to 16' DOWN VERSA-LIFT PUTS IT WHERE YOU WANT IT!

Fully hydraulic, TRUCK-MOUNTED Versa-Lift Crane puts loads higher, lower and farther out... more SAFELY, too! MOUNTS on any truck 1½ tons and up, in just 22" of space... behind cab, over hood or at truck's rear. LIFTS 7000 lbs. at 8', 3500 lbs. at 16', or 1750 lbs. at 22'... works in full 360° circle. It reaches out from 16' to 22'... farther with special boom. NO BELTS, GEARS or WINCHES... just smooth, positive hydraulic power.



Comes complete with hydraulic outriggers!

Teale
AND COMPANY
P.O. Box 398, Omaha, Neb.

For literature and prices... WRITE
For more facts, circle No. 338

AUGUST, 1959

***** **SEE IT NOW!** *****

"You're the Doctor"

New Mobil Color Film Shows You How Modern PM and Safety Methods Can Help Increase Your Profits!

This entertaining and informative film covers a number of important steps you can take to help improve equipment performance, raise job profits. It was produced with the technical cooperation of The Associated General Contractors of America, Inc.

Here are just a few of the film's highlights:

- ★ How to keep your equipment in top condition at all times with minimum paperwork.
- ★ Safety measures you can adopt to help cut down accident rates.
- ★ Timely tips to help eliminate breakdowns that cause excessive shop time and frequent replacement of costly parts.
- ★ An effective, practical way of simplifying your Preventive Maintenance.

Your Mobil representative will be glad to show you this great new film at your convenience. Just fill in and mail this coupon:

Advertising Dept., Mobil Oil Co., Inc.
150 East 42nd St., New York 17, N. Y.

Yes, I'd like to see the new PM and Safety film,
"You're the Doctor."

NAME _____

ADDRESS _____

COMPANY _____



Correct Lubrication

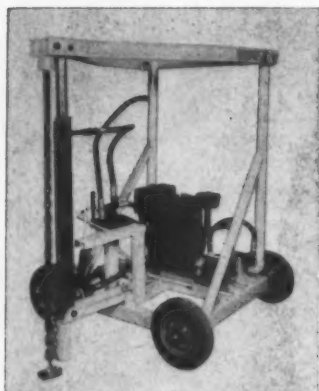
Another reason
you're Miles Ahead
with Mobil

MOBIL OIL COMPANY, A Division of Socony Mobil Oil Co., Inc.
Affiliated Companies: GENERAL PETROLEUM CORPORATION, MAGNOLIA PETROLEUM COMPANY
For more facts, use coupon or Request Card at page 18 and circle No. 339

Product Parade

Form-pin pulling machine available in two sizes

The Champion Mfg. Co. announces a concrete-form-pin pulling machine available in two sizes—with a 20-inch or a 30-inch stroke. The machine with the 20-inch stroke is designed to pull form pins up to and including the 24-inch size generally used on highway construction work. The bigger model with a 30-inch stroke will pull the 36 and 42-inch forms generally used on airport paving jobs.



The units are powered by a Briggs & Stratton 5-hp gasoline engine. All parts on the Champion pin puller are easily accessible and replaceable.

Three semipneumatic rubber tires make the unit easy to push, and rapid alignment is possible with swivel mounting on one of the wheels.

For further information write to the Champion Mfg. Co., Dept. C&E, 3700 Forest Park Ave., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 124.

Portable core drill features fast setup

The Model 5 portable core drill is available from the Dura Diamond Tool Co.

Weighing 56 pounds, the unit requires only one operator for fast setup and precision core drilling. A



triangular 2-position base allows close corner, floor, and wall drilling. A slot in the base affords greater flexibility for wall mounting. The drill is powered by a Thor motor.

According to the manufacturer, the tool will drill a smooth, perfect hole of 1/2-inch to 6-inch OD through masonry, granite, marble, tile, or reinforced concrete.

For further information write to the Dura Diamond Tool Co., Dept. C&E, 1802 N. Potrero, South El Monte, Calif., or use the Request Card at page 18. Circle No. 125.



Power steering for all models of Caterpillar D8 tractors (up to 14A models) is available from Rivinius, Inc. It is no longer necessary for the tractor to be equipped with a manual clutch change-over. According to the manufacturer, the proved attachment uses hydraulic power to positively engage or disengage the tractor's steering clutches, reducing wear and operator fatigue. For further information write to Rivinius, Inc., Dept. C&E, 602 W. Center St., Eureka, Ill., or use the Request Card at page 18. Circle No. 89.

ANNOUNCING LIMA'S NEW

...More than doubles the compaction production any

In only one pass, Lima's new Super Roadpacker achieves densities which require two or more passes to accomplish with any other multiple-shoe vibratory compaction unit! It's specially designed to meet the demands for high-production compaction on large construction jobs such as superhighways, air bases and earth-fill dams.

Even "tough-spec" materials can now be compacted on a production basis at speeds from 26 to 268 fpm—highway travel up to 24 mph. Two rows of six hydraulically controlled vibratory shoes can compact at varying widths up to 15 ft. High flotation tires; tandem rear driving wheels. Power brakes and power steering. Investigate. See your nearby Lima distributor today or write: Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio, U.S.A.

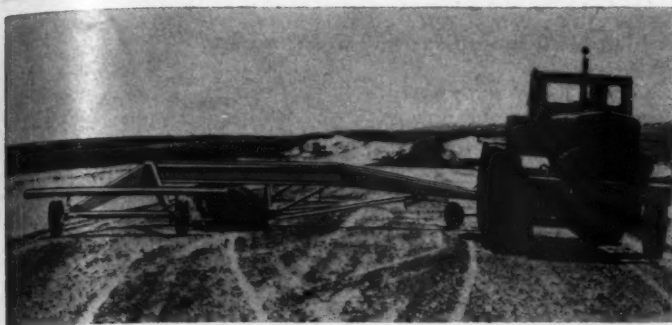


Profit with single course construction; cut number of passes in half with new Super Roadpacker

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment



The hinged design of the Eversman highway plane permits it to be turned with ease.

Base-course finishing speeded by highway plane

The Eversman highway plane, a piece of long-span leveling equipment said to be highly effective in eliminating irregularities in the base course, as well as in subgrade and subbase, if particle sizes do not exceed 1½ inch, is available from the Eversman Mfg. Co.

The machine has a 40-foot wheel-base, pneumatic tires, a 10-foot cut-

ting blade, hydraulic controls, and a hinged frame that permits an easy 22-foot-diameter turn on the roadbed. An industrial tractor of 40 to 45 horsepower is usually used to pull the machine.

In actual movement of material, according to the company, the work done by the highway plane is of a relatively light nature, since the patrols have taken care of the heavy work of spreading and shaping.

For further information write to the Eversman Mfg. Co., Dept. C&E, 1145 Fifth St., Denver 4, Colo., or use the card at page 18. Circle No. 94.

Contraction-joint insert seals crack, ties slabs

Edoco Technical Products, Inc., announces a rubberlike plastic insert for installing in wet concrete. After the hardened concrete forms a weakened-plane contraction joint, the insert seals the joint and ties the slabs together.

The installation is simple, the manufacturer claims, and the buried material does not deteriorate through weathering and is stable to freezing temperatures to minus 55 degrees F.

For further information write to Edoco Technical Products, Inc., Dept. C&E, 2370 E. Artesia Blvd., Long Beach, Calif., or use the Request Card at page 18. Circle No. 5.

Offer new safety hat in high-impact plastic

A molded high-impact plastic safety hat with adjustable all-plastic suspension is available from the Davis Emergency Equipment Co.

New features of the helmet include a suspension that can be adjusted exactly to head sizes from 6½ to 7¾ inches. The suspension comes in two



parts, both of which are replaceable, and the detachable sweatband is also replaceable.

According to the manufacturer, the headband is designed to fit the back of the head snugly, preventing the hat from falling or blowing off.

For further information write to the Davis Emergency Equipment Co., Dept. C&E, 45 Halleck St., Newark, N. J., or use the Request Card at page 18. Circle No. 126.

For more facts, circle No. 340

Super ROADPACKER

any multiple shoe vibratory machine!

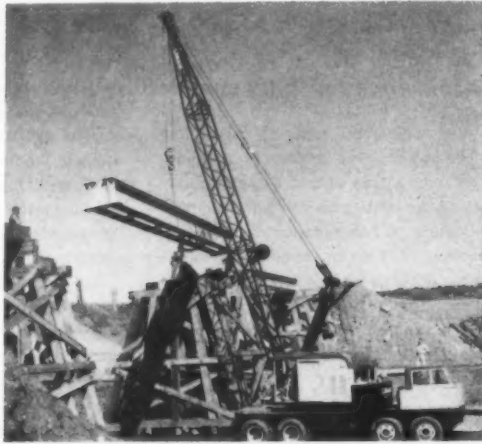


LIMA MODEL D ROADPACKER

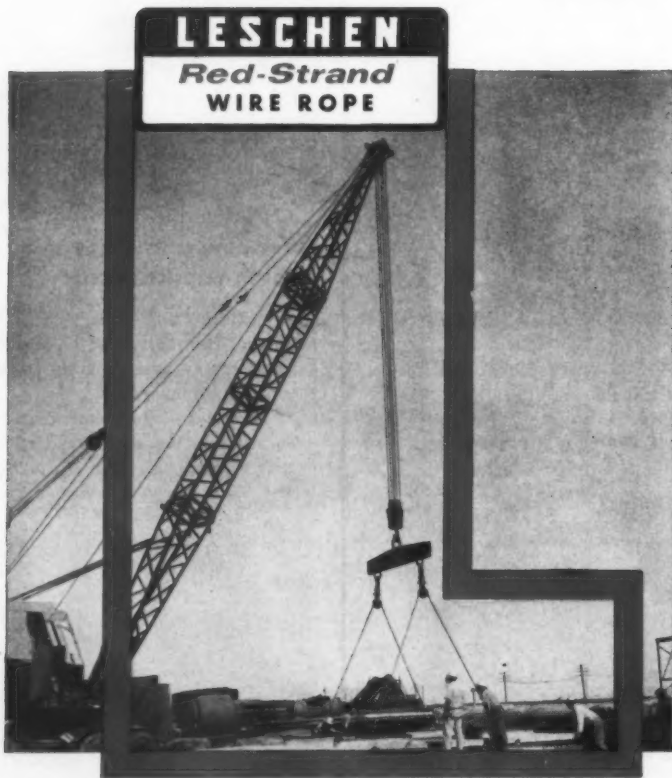
For the job that does not require the Super Roadpacker, the Model D—with six vibratory shoes and variable working widths—will give fast, wide, deep compaction at speeds from 20 to 95 mph—road speeds to 30 mph.



Featured on this 30-ton Lorain Moto-Crane is the rocker beam-mounted front bogie that doubles the front-axle carrying capacity.



when the going gets rough—
give 'em "L"



When the load is on the crane, you'll be glad you rigged with Leschen—the wire rope that's the same top quality in every foot of every reel. The new Leschen wire mill is designed to deliver exactly that. New machines... new processes... exclusive new continuous-flow technique—all as modern as tomorrow. Try

Leschen Red-Strand Wire Rope now and see how its uniform quality makes your operation safer, your replacement time farther in the future. Make your next order Leschen! Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.

LESCHEN WIRE **PORTER** ROPE DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION; NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION; VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION; FORGE AND FITTINGS DIVISION; LESCHEN WIRE ROPE DIVISION; MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepocoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

For more facts, use Request Card at page 18 and circle No. 341

Add new 30-ton unit to shovel-crane line

A new 30-ton 8x4 rubber-tire Lorain Moto-Crane is announced by The Thew Shovel Co.

One of the major features of this Model MC-430 carrier is the rocker beam-mounted front bogie that doubles the front-axle carrying capacity. When heavy loads are carried suspended from the boom over the rear, this type of construction is said to give better steering because the additional weight of the front end increases the load and "steerage" on the steering wheels.

Other carrier features are: 8-wheel brakes, 15 forward speeds to 47 mph; hydraulic power-assist steering; high traction differentials; and "through drive" that delivers engine torque to

the axle having the tractive ability.

The turntable can be located in three different positions for best operating advantage. These changes can be made easily in the field for maximum crane lifting capacities, best digging ranges, or for general-purpose work, according to Thew.

A power-operated folding-gantry lowers below cab height for minimum clearance for highway travel. The MC-430 is completely interchangeable as crane, clamshell, dragline, shovel, or hoe.

For further information write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 127.

Pile-hammer vibration cushioned by dampener

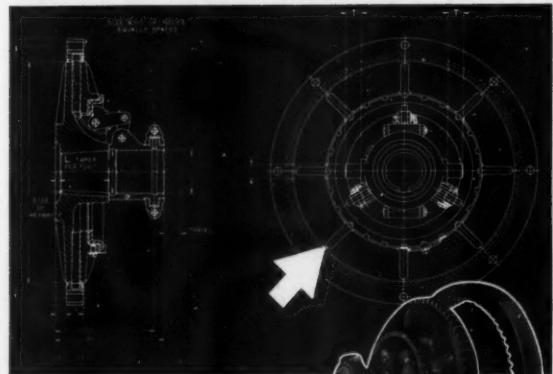
Disogrin, a dampening material designed to cushion vibration in a pile-hammer operation, is announced by Disogrin Industries, Inc. It is employed primarily to eliminate any metal-to-metal contact by cushioning the vibration created by the ram hitting the anvil.

According to the manufacturer, this dampener features high heat and

oil-resistance properties, as well as high tensile strength. Also, it is interchangeable on hammers of different design.

For further information write to Disogrin Industries, Inc., Dept. C&E, 510 S. Fulton Ave., Mount Vernon, N. Y., or use the Request Card at page 18 of this issue. Circle No. 67.

ROCKFORD



**Strength with
Light Weight
for Heavy-Duty Work**

Ribbed construction, in ROCKFORD HE Over-Center CLUTCHES, Provides strength, without undue weight, to the clutch body and pressure plate. Driving pressure is applied toward the outside of the facing to assure that ROCKFORD CLUTCHES will continue to pull their full rated load during their long service life—particularly in power take-off applications. The load is carried by teeth on the outside diameter of the facing member. While your power transmission control projects still are in the planning stage, it will pay you to consider how this ROCKFORD CLUTCH will provide added strength with less weight.

SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

314 Catherine St., Rockford, Ill., U.S.A.
Expert Sales Borg-Warner International — 35 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 342

CONTRACTORS AND ENGINEERS

Heavy-duty gear lubricant in SAE 90 and 140 grades

Molykote Type 223X, a new heavy-duty gear lubricant available in SAE 90 and 140 grades, is announced by The Alpha-Molykote Corp.

This lubricant is recommended for problems such as gear cases operating at excessive frictional temperatures, overloaded gears, etc.

Molykote Type 223X has a viscosity index of 100. Its flash point is 390 degrees F, and its fire point is 420.

For further information write to The Alpha-Molykote Corp., Dept. C&E, 65 Harvard Ave., Stamford, Conn., or use the Request Card at page 18. Circle No. 25.



Batching and discharging 1,150 batches in one day, a single Noble concrete batching plant supplied the spread that set the new Rhode Island highway paving record of a reported 5,394 feet in one day on relocation of State Routes 2 and 3. Campanella & Cardi was the contractor. Two dual-drum pavers placing concrete every 30 seconds depended on an uninterrupted flow of materials. The batching plant, with overhead aggregate storage of 150 tons and separate overhead cement storage of 500 barrels, batched two aggregates and cement simultaneously, and discharged materials to 8 dry-batch trucks for hauling to the paving site 7 miles away. For further information write to The Noble Co., Dept. C&E, 1860 Seventh St., Oakland, Calif., or use the Request Card at page 18. Circle No. 143.

Offer re-usable tie for gang forming

A new re-usable tie designed specifically for gang forming with Symons panels has been introduced by the Williams Form Engineering Corp. Quick, positive disconnection of the tie through its double lead thread permits faster erection and stripping of ganged sections, according to the manufacturer. The tie has a working load of 4,000 pounds and an ultimate

tensile strength of 6,000 pounds. The outer unit of the tie is of one-piece construction and is easily removed for re-use.

For further information write to the Williams Form Engineering Corp., Dept. C&E, 1501 Madison Ave. S. E., Grand Rapids 7, Mich., or use the Request Card that is bound in at page 18. Circle No. 87.

Now modernize your "Cat" Motor Graders with Rivinius Torque Steering Booster... Hydraulic Moldboard Shift



both for less than \$550 with guaranteed performance

Put these cost-cutting Rivinius "twins" to work for you NOW at this new, amazingly low priced Less operator fatigue... less job time... better job quality mean more profit dollars from every job. Check these Rivinius features —

HYDRAULIC MOLDBOARD SHIFT

- Fits any "Cat" grader with sliding moldboard
- Can be teamed with Rivinius or other hydraulic power steering — operates off same pump
- Shifts at the touch of a hand — correct position for every application
- Moldboard stops and locks at any position operator wishes
- Functions whether grader is moving or stationary
- Moves through full distance of travel in less than 20 seconds

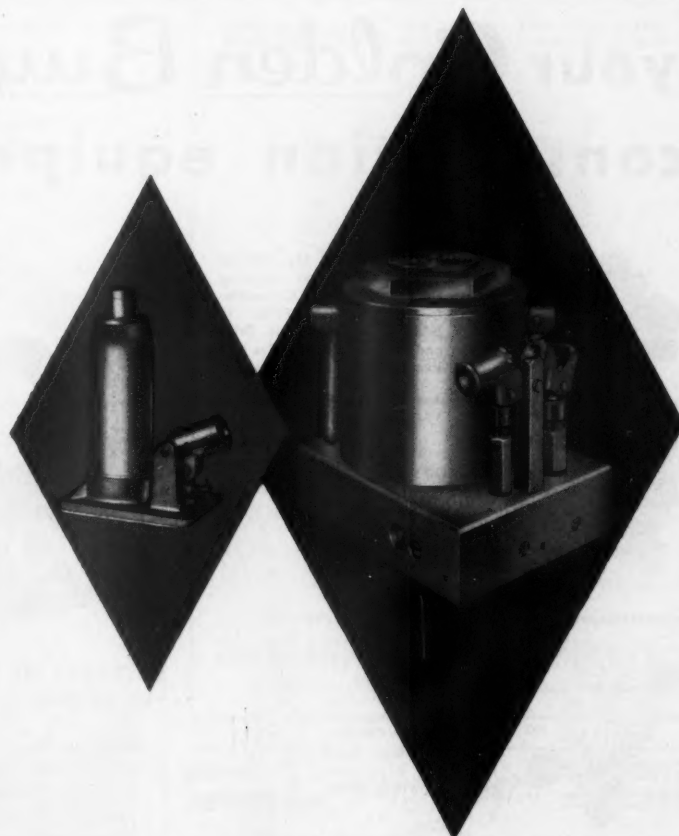
TORQUE STEERING BOOSTER

- Fits any "Cat" grader
- Small, compact, lightweight — but amazingly powerful
- Easy to install... trouble-free design... few moving parts
- Holds grader from drifting — even on inclines
- Frees operator's hands for handling blade and other controls
- Mounts high above dust, dirt, moisture

SEE YOUR CATERPILLAR DEALER NOW... OR WRITE:

Rivinius, inc. EUREKA, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 343



TWELVE EASY WAYS TO LIFT FROM 3 TO 100 TONS—USE DUFF-NORTON HYDRAULIC JACKS

Designed for ease of operation this rugged, dependable line of Duff-Norton hydraulic jacks gives you rapid rise with minimum effort. Twelve models in 10 different capacities ranging from 3 to 100 tons meet the lifting requirements of all types of industry.

Duff-Norton Hy-Power Hydraulic Jacks are stocked by your distributor. For quick delivery call him the next time you need a jack, or write for a copy of Bulletin AD-16S to obtain complete details and specifications.

DUFF-NORTON COMPANY

P. O. Box 1889 • Pittsburgh 30, Pennsylvania

COFFING HOIST DIVISION • Danville, Illinois

DUFF-NORTON JACKS

Ratchet • Screw

Hydraulic • Worm Gear

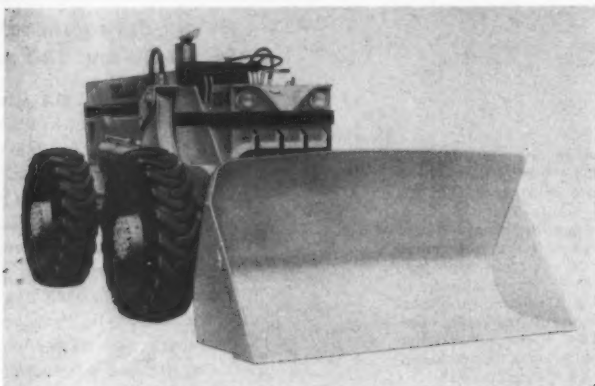


COFFING HOISTS

Ratchet Lever

Hand Chain • Electric

For more facts, use Request Card at page 18 and circle No. 344



This newest model of the Trojan line of pneumatic-tire tractor shovels has a lifting capacity of 12,000 pounds. It is said to offer exceptional stability and maneuverability.

Two-yard tractor shovel lifts up to 12,000 pounds

A new 2-cubic-yard rubber-tire tractor shovel, the Trojan Model 204, is announced by The Yale & Towne Mfg. Co.

The machine features 4-wheel drive and has a maximum lifting capacity of 12,000 pounds. A selection of buckets of 1½, 2, and 2¾-cubic-yard capacities is available, as well as a full complement of attachments readily interchangeable with the bucket.

The Model 204 is available with either gas or diesel power and is equipped with full power-shift, 3-speed transmission, and a 3.5:1

torque-multiplying torque converter. The travel speeds range from 3 mph in low gear to 21 mph in third gear, in both forward and reverse.

Dumping clearance is 10 feet 1 inches under the hinge pin and 8 feet 7 inches under the bucket cutting edge. At this point there is a dump angle of 47 degrees, providing for fast, complete cleanout of the bucket.

For further information write to The Yale & Towne Mfg. Co., Trojan Division, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 113.

your Golden Buy in construction equipment



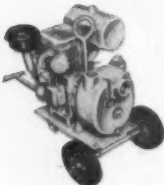
TRANSCRETES

... with real money-making, cost-saving features including SWING-OUT HOPPER, trouble-free FLOATING DRIVE. 18 MODELS. Truck Engine Drive and Separate Engine Drive in 5 sizes to 7-yards mixing capacity.



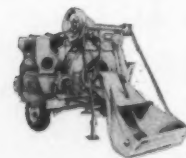
PLASTER & MORTAR MIXERS

... exclusive CMC "Triple-Hoe" mixing action for better quality, quicker mixes. 4 to 12 cu. ft. sizes.



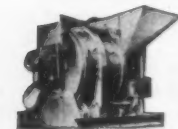
DUAL PRIME PUMPS

... automatic priming, self-cleaning. Capacities from 4000 to 240,000 g.p.h. Gasoline, diesel or electric. ALSO DIAPHRAGMS, OTHER TYPES.



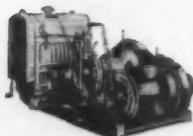
BUILDING MIXERS

... rugged, compact, easy to spot, easy to move. Make you more money on every job. From 3½ to 16S sizes.



CENTRAL PLANT MIXERS

... designed to speed up production on big jobs and in commercial ready mix plants. Three sizes ... 1, 2, and 3 yard capacities.



HOISTS

... tops in design, construction, efficiency. Many sizes. Complete selection in single and multiple drum models from 8 to 45 H.P.



50 YEARS OF PROGRESS IN PRODUCING THE BEST IN CONSTRUCTION EQUIPMENT

1959, our Golden Anniversary year, marks 50 years of continuous progress in the design and manufacture of construction equipment that does the job better and at less cost. Our 50 years of experience and know how is one of your best guarantees that CMC products will always be of the most advanced design — and as traditional — your finest buy for dependable, low-cost, trouble-free operation.

Sold and serviced throughout the nation by a network of "America's Best Distributors."



CONSTRUCTION MACHINERY COMPANY
WATERLOO, IOWA

MAIL COUPON FOR NEW FREE CATALOGS

Gentlemen: Rush me your latest literature on CMC products I have checked below:

- | | |
|--|---|
| <input type="checkbox"/> TRANSCRETES | <input type="checkbox"/> BUILDING MIXERS |
| <input type="checkbox"/> PLASTER & MORTAR MIXERS | <input type="checkbox"/> CENTRAL PLANT MIXERS |
| <input type="checkbox"/> PUMPS | <input type="checkbox"/> HOISTS |

NAME _____

ADDRESS _____

CITY _____

STATE _____

For more facts, use coupon or Request Card at page 18 and circle No. 345

New portable radiophone prevents interference

A portable tone-coded squelch 2-way radiophone, designed to block out interference caused by other radio systems on a user's channel, is announced by Motorola. Called Private Line radio, the new Handie Talkie 2-way unit provides the same protection from local and long-range skip interference as the company's Private Line mobile and base station equipment.



The new radiophones are available in low and high-powered versions in both the 25 to 50-mc and the 144 to 174-mc frequency bands. The equipment can be operated from long-lived dry cell or rechargeable nickel cadmium interchangeable battery power packs. The units vary in weight from 7 to 18 pounds.

For further information write to Motorola Communications & Electronics, Inc., Dept. C&E, 4501 W. Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 128.

Diamond core drill is air-powered unit

The Acker Drill Co., Inc., announces the availability of a new air-powered Packsack diamond core drill. It works wherever compressed air is available.

Lightweight and completely portable, the Packsack features reduced operational water requirements and a detachable air jack leg.

For further information write to the Acker Drill Co., Inc., Dept. CAD, P. O. Box 830, Scranton 2, Pa., or use the Request Card at page 18. Circle No. 103.

CONTRACTORS AND ENGINEERS

Payload up 15 per cent with new rear-dump

The use of extra-strength steel and new design characteristics are said to boost payload, durability, and operating efficiency in the Model PR619 25-ton rear-dump trailer announced by Athey Products Corp.

According to the manufacturer, the use of extra-strength T-1 steel in the body of the new trailer gives exceptional resistance, even at minus 50 degrees F, to the type of punishment met with in earthmoving. Its yield strength is said to run nearly three times that of structural carbon steel. The tougher steel also trims dead weight and substitutes 15 per cent extra payload. The PR619 hauls up to

20 cubic yards heaped on a 2 to 1 slope, or 25 tons—more than 2½ times its own weight, and dumps in 12 seconds.

Design features include flared body top, for bigger loading target at no increase in trailer width; spill deflectors, to retain load and protect tires and hydraulic system during loading; reinforced cellular floor; self-aligning hoists; and a new hydraulic system.

For further information write to the Athey Products Corp., Dept. C&E, 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 29.



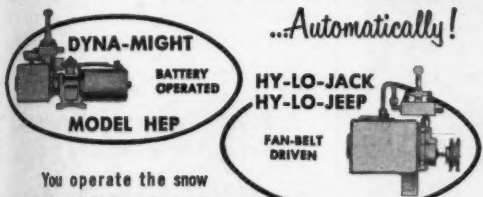
The Athey T-line PR619 rear-dump hauls 25 tons and dumps in 12 seconds.

SNOW REMOVAL is faster, easier, more economical



WITH **MONARCH Power Hydraulic CONTROLS** that **LIFT** and **LOWER** the snow plow...

...Automatically!



You operate the snow plow right from the truck or jeep cab with Monarch Controls. Instant, automatic lifting or lowering that saves time, does the job more efficiently. See your dealer or write for illustrated folder.

MONARCH

MONARCH ROAD MACHINERY COMPANY

1391 MICHIGAN ST., N.E., • GRAND RAPIDS 3, MICHIGAN
For more facts, circle No. 346

NO CONCRETE PIT! Easiest to MOVE!



PORTABLE TRUCK SCALES

Engineered for rugged use in the field. Low initial cost, no maintenance. Can be used as PITLESS SCALE saves on pit costs.

CAPACITIES: 20 to 52 tons. DECK LENGTHS 18 to 43 ft.
OTHER THURMAN SCALES: Pit • Warehouse • Industrial • Liquid Weighing • Wheelbarrow • Batching • Automatic
Precision Scales since 1918



156 N. 5th St. Dept. CE-1, Columbus, Ohio
For more facts, circle No. 347

For more facts on these products, circle the indicated number on the Request Card at page 18.

Portable lighting system for construction sites

A new portable lighting system for construction sites is announced by the Thompson Tractor Co.

Called Wide-Lite, the system consists of a series of telescoping towers, each of which supports three Wide-Lite area lights using 1,000-watt color-corrected mercury vapor lamps.



The Thompson tower, in lowered position, showing the 1,000-watt Wide-Lite area lights, trailer, etc.

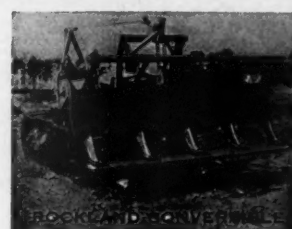
The tower itself is of tubular-steel fabrication and is mounted on a rubber-tire trailer, complete with trailer hitch and worm-gear-drive winch for raising the tower to vertical position. Lowered, the tower is 20 feet long, and in vertical position it extends to a 37-foot height.

The towers are connected by 300- or 500-foot conductor cables, and electrical power is generated by a Caterpillar D311 diesel electric set.

Terrain permitting, the Thompson system reportedly can utilize 10 towers, placed at 500-foot intervals, to illuminate an area of one mile.

For further information write to Thompson Tractor Co., Dept. C&E, 500 N. 28th St., Birmingham, Ala., or use the Request Card at page 18. Circle No. 49.

ROCKLAND—THE MOST VERSATILE LAND-CLEARING ATTACHMENTS IN THE WORLD.



Easily converts from Tree-Brush-Root Cutter to Standard Rake Front

- ROCK RAKES
- GENERAL PURPOSE RAKES
- BRUSH RAKES
- TREE KNOCK-DOWN BOOMS
- TREE SAWS
- BACK-RIPPER TEETH
- STUMPMASTER BLOCKS
- STUMP PULLERS
- TOOL BARS
- UNDERCUTTERS
- ROOT CUTTER TEETH
- HI-BALLS AND CHAIN

Rockland Products may be purchased from most Allis Chalmers, Eimco, International Harvester and Oliver Crawler Tractor dealers. For additional information, contact direct.

ROCKLAND ALLIED EQUIPMENT CO.

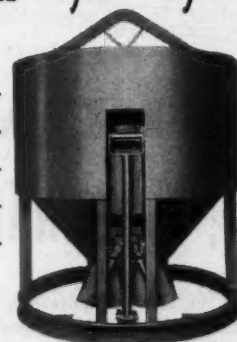
3778 West Colonial Drive • Orlando, Florida

For more facts, circle No. 348

NEW! JOHNSON® light-weight CONCRETE BUCKETS

SIZES:	NET WEIGHT*
½ cu. yd. . . .	355 lbs.
¾ cu. yd. . . .	455 lbs.
1 cu. yd. . . .	700 lbs.
1½ cu. yd. . . .	840 lbs.
2 cu. yd. . . .	1075 lbs.

*approx.



Light in weight, low in cost, this all-new series of concrete buckets from Johnson gives high ratio of capacity-to-weight. Makes each pour more profitable for you! Features: all-welded steel hopper, frame. All working parts above discharge point and well

within bucket outline—protected during work, storage, shipment. 50° slope of cone bottom gives complete discharge of medium-slump concrete. Short-stroke, easy leverage handle. Double-clamp gates. Stainless steel shafts in nylon bearings. Write today!

— Mail to C. S. JOHNSON CO., Champaign, Ill. —

Send more information on _____ cu. yd. light-weight concrete bucket

NAME _____

COMPANY _____

STREET _____

CITY, STATE _____



CHAMPAIGN, ILLINOIS • STOCKTON, CALIF.

For more facts, use coupon or circle No. 349

Single, double-well material towers offered

New Mayco single-well and double-well towers are available from the Tubular Structures Corp. of America.

Platforms may be removed from the towers for conversion to the use of concrete or Mayco passenger-elevator equipment.

Both single and double-well towers include all standard components, such as tower base, cage platform assembly, bottom sheave assembly, necessary 6-foot 6-inch intermediate sections, top channels, landing panel and cathead. Optional accessories include a material-handling boom in either a 14, 20, or 30-foot length with

a 1,000 or 2,000-pound capacity, and cage top sheave for use with 2-part line concrete and passenger-elevator equipment. Parts are interchangeable for erecting single or double towers.

Live-load capacity is 5,000 pounds. A lighter model is also available with a 3,000-pound capacity. Either model will accommodate two or three wheelbarrows or two concrete carts.

For further information write to the Tubular Structures Corp. of America, Dept. C&E, 2960 Marsh St., Los Angeles 39, Calif., or use the Request Card that is bound in at page 18. Circle No. 14.



Offering greater horsepower and faster laying speeds, this Barber-Greene Model 879-B finisher also features improved crawler design and faster tamper action.

Crawler-mounted finisher works at speeds to 64 fpm

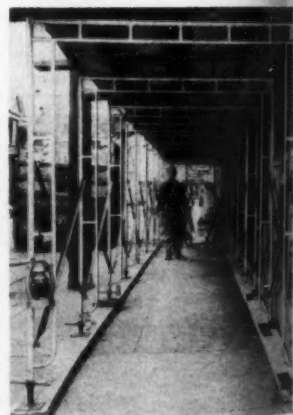
A new crawler-mounted asphalt paver featuring faster laying speed, faster travel, lower maintenance cost, and increased power is announced by the Barber-Greene Co.

Designated Model 879-B, the machine has a transmission that provides 12 speeds forward, a maximum operating speed of 64 fpm, and travel speeds up to 3 3/4 mph.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 130.

Sidewalk-canopy frames erect quickly, easily

Scaffolding components designed to provide a quicker, easier method of making sidewalk canopies for pedestrian protection around construction sites are available from The Patent Scaffolding Co., Inc.



The frames are 7 feet 6 inches high x 6 feet wide and are composed of tubular-steel members with reinforcing sections. When assembled with diagonal braces, base plates, and adjustable legs, a simple, yet strong, sidewalk-canopy section of any length can be achieved, states the company.

Additional sectional scaffolding may be erected on planking laid across the tops of the frames.

For further information write to The Patent Scaffolding Co., Inc., Dept. C&E, 38-21 12th St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 131.



**THEY SAID IT
COULDN'T BE DONE...**

But, A TERRAPAC VIBRATORY ROLLER DID IT!

We used this phrase because it fit our application like a glove . . . There were skeptics on this job, experienced men who said we would never be able to hit specified densities at this sharp 45° angle . . . Our Terrapac CK-10 did just that — hit density — in only two passes . . . Compaction costs were sliced 50% . . . Thanks to the specially designed swivel mount, engineered by Vibro-Plus, there was no engine stalling . . . We know we proved the near impossible on this job . . . What have you coming up? . . . Terrapacs meet all tests — can do your job — with any of 5 vibratory compactors . . . You choose the place, let us demonstrate the point!



VIBRO-PLUS PRODUCTS, Inc.

STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES!

For more facts, use Request Card at page 18 and circle No. 350

the NEW Massey-Ferguson Work Bull 204 has Pedal Directional Control



*the only 40-h. p.
Industrial Tractor
with Instant Reverse
and Torque Converter*



PEDAL DIRECTIONAL CONTROL

Massey-Ferguson's exclusive instant reversing and speed are controlled by this simple 3-point, combination directional-acceleration pedal. Right pedal—forward, left—reverse. The farther you depress each pedal the faster you go. Changes directions instantly, smoothly. Center pedal is foot accelerator to speed loading and dumping.

SEE IT...TRY IT... to really learn the benefits of this powerful, new Massey-Ferguson Work Bull 204. Faster cycling, unmatched maneuverability, greater earning power are a few.

A simple touch of your toe on the 3-point pedal control changes your direction of travel, determines your speed, or lets you "rev" up the engine for faster loading or dumping. Four equal speeds in each direction — "job engineered" to meet every work requirement — lets you select the speed you need for each particular job. Torque converter automatically adjusts power to load demands. No shifting... no clutching... no levers to pull.

With the new M-F Davis Loader, integrated with the Work Bull 204, you have a rig that can't be beat — no matter what comparison you use. For an all-around unit, add the M-F Davis Backhoe or Scarifier-Scraper... you'll be in business for profit!

**A DEMONSTRATION WILL PROVE IT
CALL YOUR M-F INDUSTRIAL DEALER NOW**



MASSEY-FERGUSON INDUSTRIAL DIVISION

BLOCK 1000 SOUTH WEST STREET • WICHITA 13N, KANSAS

For more facts, use Request Card at page 18 and circle No. 351

New angling dozer blades offer increased visibility

Angling-blade bulldozers for all models of Caterpillar Traxcavators are announced by Balderson Inc. The blades are designed for greater maneuverability, better operation in restricted areas, and increased visibility for the operator.

Engineered to match the width, power, and traction of the Traxcavator, the new dozers may be angled right or left, or used in straight position. The Balderson blades are quickly interchangeable with Traxcavator buckets, either front or side delivery; it is necessary only to re-

move the bucket and attach the Balderson frame, using the Traxcavator pins.

The breakout action of the Traxcavator controls, insuring fast, positive tilt and pitch, makes the new Balderson blades ideal for pioneer dozing in rough areas, according to the manufacturer. The high lift action reportedly provides added leverage for land-clearing operations.

For further information write to Balderson Inc., Dept. C&E, Wamego, Kans., or use the Request Card at page 18. Circle No. 31.



The Balderson angling dozer blade is easily mounted on Caterpillar Traxcavators.

NEW

TALBERT'S "SKELETON - FRAME"

greater payload
capacity for frame
dump trailers



Talbert's "Skeleton-Frame" construction provides the stability of frame-type Dump Trailers . . . PLUS . . . the increase of thousands of pounds to your payload! Only Talbert combines the features of frame construction with "frameless" light weight.

CHECK AND SEE . . . you'll agree Talbert gives more!

STABILITY AND SAFETY—All axles are securely on the ground during lift.

PROVEN WEIGHT DISTRIBUTION—Usually not found in frameless trailer designs.

EASIER HANDLING—More reliable in tough unloading areas.

HIGHER STOCK PILING—Reduces re-handling costs and material storage areas.

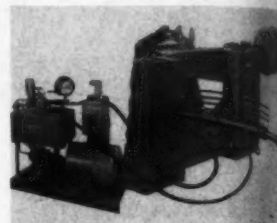
Don't chance it! Get that extra margin of safety! . . . with increased payload! Talbert's "Skeleton-Frame" Dump Trailer is available in 20 and 26 foot lengths. Get Talbert Trailers for longer service with less maintenance. Your Talbert Distributor will gladly tell you all about it . . . see him today . . . or write for complete information!

Talbert Trailers, Inc.
7950 WEST 47th STREET
LYONS, ILLINOIS

For more facts, use Request Card at page 18 and circle No. 352

Cable tensioning system for concrete prestressing

The No. X349 center-hole single-strand tensioning unit is offered by Templeton, Kenly & Co.



Consisting basically of a hydraulic pump and center-hole ram, this system is said to tension one cable of a 300-foot bed in about one minute. Two units are available—one for a 200-foot bed and one for a 300-foot bed.

For further information write to Templeton, Kenly & Co., Dept. C&E, 2525 Gardner Road, Broadview, Ill., or use the Request Card at page 18. Circle No. 133.

ABC NEOLON FLEXIBLE TUNNEL VENTILATION TUBING

- Weighs only a fraction of metal pipe.
- One man can easily install it.
- Can't dent, rust or corrode like metal pipe. Costs less than metal pipe.
- Neolon is tough neoprene-coated nylon — will not tear — rocks bounce off.



Send for FREE sample of NEOLON and catalog

**ABC AMERICAN
BRATTICE CLOTH CORP.**
233 Argonne Rd., Warsaw, Indiana

For more facts, circle No. 353

CONTRACTORS AND ENGINEERS



The Geo-Drill machine offers drilling rates up to 2 inches per minute through reinforced concrete.

Portable electric drill is versatile machine

The Geo-Drill Co. announces a portable electric diamond drill and accessory thin-wall diamond bits for drilling holes up to 9 inches in diameter through reinforced concrete, masonry, rock, asphalt, etc.

This one-man drilling unit can drill vertical, horizontal, or angle holes, and is used for the installation of pipe, electrical conduit, and anchor bolts, as well as for taking test cores.

The drill column can be folded down to the base and the unit rolled on its two roller-bearing wheels like a hand truck. It is driven by a 1½-hp 110 or 220-volt 60-cycle single-phase electric motor that develops a bit speed of 1,000 rpm. A voltage change-over switch provides a quick change from 110 to 220 volts. Total weight is 190 pounds.

For further information write to the Geo-Drill Co., Dept. C&E, P. O. Box 6, Bridgeville, Pa., or use the Request Card at page 18. Circle No. 23.

Sixteen men sit comfortably in the Michigan exploration tractor Model 75. A trailer towed behind hauls 3 tons of supplies and materials. Designed for pioneering work in rough areas where roads may be crude or nonexistent, the 110-hp tractor has 4-wheel drive and runs on six 15.00-34 10-ply nylon tubeless tires. To turn, the machine pivots in the middle; by actually pushing the front half away from the back with hydraulic cylinders, it can dodge trees, weave a zigzag path through a forest or dense growth, and make a circle in less than its own 21-foot length (without the trailer). Travel speeds range up to 29.6 mph. For further information write to the Clark Equipment Co., Dept. C&E, P. O. Box 599, Pipestone Road, Benton Harbor, Mich. or use the Request Card at page 18. Circle No. 73.



...it's here!
engineered and built for your job



THE GREAT NEW EIMCO 103

Eimco revolutionized the tractor field when it first introduced such exclusive features as up-front operator position, the famous "Unidrive" teamed with single stage torque converter and dual final drives, plus new high standards of quality and craftsmanship, in the world famous Big E, the Eimco 103. Now, Eimco's advanced engineering and on-the-job research has resulted in a medium size 100 HP tractor series that sets new standards in its field. The Eimco 103 series incorporates every proven advance-design feature of the 105, plus...

"QUADRA-TORQUE" — Four forward and four reverse speeds at the flip of a lever. Operator can select speed ratio, go from forward to reverse and back again, at any engine or tractor speed, with finger-tip ease.

GREATER GROUND CLEARANCE — Every Eimco 103 has a full 17 inches ground clearance, up to 40% more than comparable machines! Permits operations forward or reverse on grades up to 30%, with new, even greater maneuverability.

UNITIZED "STRESS FLOW" CONSTRUCTION — Just like a massive strong locomotive, your Eimco 103 is unit-built from large strong steel castings molded to shape and thickness required, to withstand greater stress than you can ever place upon it. Main frame, final drive and center housing are one super-strong casting, as are the track frames, with no bolts or welds. Components still readily accessible... and what a difference this strong, rigid unitized construction makes on really tough jobs!

SELF-CLEANING AIR CLEANER — Great new feature that does away with cleaning the bowl every few hours! Utilizes venturi action of exhaust pipe to clean itself automatically.

These are just the highlights! For all facts and data, write for specifications and comparative fact sheet, listing vital statistics of all leading makes of tractors and front end loaders. Prove to yourself, the superiority, in every quality component, of the great new Eimco 103 series! Write Dept. AN-3, The Eimco Corporation, P. O. Box 300, Salt Lake City 19, Utah, U.S.A.

THE GREAT NEW EIMCO 103 SERIES:
Eimco 103 — Tractor and Dozers
Eimco 123 — Front End Loader
Eimco 133 — Special Steel Mill FEL
Eimco 143 — Rugged Log Loader

Greater Drawbar Pull — Greater Workability!

"ADVANCED ENGINEERING AND QUALITY CRAFTSMANSHIP SINCE 1884"

THE EIMCO CORPORATION



TRACTOR LOADER DIVISION

834 SOUTH 4TH WEST
SALT LAKE CITY, UTAH — U.S.A.

EXPORT OFFICE: 81-83 SOUTH STREET, NEW YORK, N. Y.
BRANCHES AND DEALERS IN PRINCIPAL CITIES THROUGHOUT THE WORLD

For more facts, use Request Card at page 18 and circle No. 355

GOT THIS?

(Dewatering Problem)



GET THIS!

(Skilled Wellpoint Engineering)



From
GRIFFIN
WELLPOINT CORP.

SALES • RENTAL • CONTRACT
881 E. 141st St., New York 54, N.Y.
Jacksonville, Fla. • Houston, Tex.
W. Palm Bch., Fla. • Hammond, Ind.

For more facts, circle No. 354

AUGUST, 1959

An outstanding feature of the new Lorain Moto-Crane is its lighter, stronger boom.

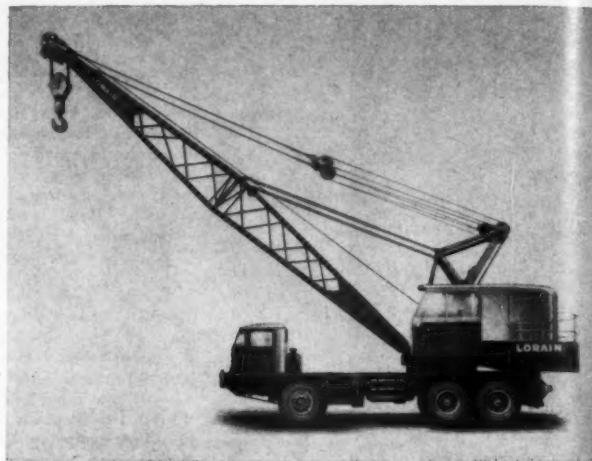
New model truck crane has 80-ton capacity

The Thew Shovel Co. has announced a new 80-ton Moto-Crane—the Model MC-875. The rig contains the latest Lorain-built features, including shear ball turntable mountings, 2-lever Joy-Stick air controls, square-tubular-chord boom, and one-piece cast-steel carrier frame.

According to the manufacturer, the lighter, stronger, square-tubular-chord boom contributes substantially to the high rated capacities of this model. Continuous round tubular lac-

ing is welded to the chords at common points, giving a "banding" effect said to produce greater strength. The machine handles up to 200 feet of boom, plus a 40-foot tip extension that is also of square-tubular-chord construction. Ten travel speeds up to 20 mph are available.

For further information write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 39.



Voids in Concrete Slabs Save Materials and Money



Cobb Park Armory, Fort Worth, Texas. Hedrick & Stanley, architect and engineer. Childs Construction Company, general contractor.

Form voids with low-cost

SONOCO

SONOVOID®

FIBRE TUBES

By displacing low-working concrete at the neutral axis, SONOVOID Fibre Tubes reduce weight and save materials in concrete construction. Because voided slabs have less deflection, they are ideal for long spans, and increase design flexibility.

In the Cobb Park Armory job illustrated, 35,000 linear feet of SONOVOID Fibre Tubes were used. The voided slab system was chosen in order to achieve a smooth ceiling over a long span—and at the same time reduce weight and save concrete and steel.

Low in cost and easy to handle, Sonoco SONOVOID Fibre Tubes are specifically designed for use in concrete floor and roof slabs, bridge decks, lift slabs, and precast, prestressed concrete piles.

Order SONOVOID Fibre Tubes in required lengths or standard 18' shipping lengths . . . sizes available from 2.25" to 36.9" O.D. (can be sawed). End closures available.

See our Catalog in Sweet's

For complete information and slab design tables, write

SONOCO
Construction Products
SONOCO PRODUCTS COMPANY

• HARTSVILLE, S. C.
• LA PUENTE, CALIF.
• FREMONT, CALIF.
• MONTCLAIR, N. J.
• AKRON, INDIANA
• LONGVIEW, TEXAS
• ATLANTA, GA.
• BRANTFORD, ONT.
• MEXICO, D. F.

3687

For more facts, use Request Card at page 18 and circle No. 356

New vibrating plate eases tamping jobs

The Model VPG 1500 Vibro-Plate, a vibrating tamper that delivers 5,000 impacts per minute, is announced by the Wacker Corp.



This 135-pound vibrating plate is especially designed for working plate-to-reach corners, close to curbs and gutters, and areas adjacent to walls and abutments. The 3-hp engine develops a 1,700-pound impact, according to the manufacturer. A special built-in water attachment prevents asphalt adhesion.

The new model will densify and finish sand, gravel, cold or hot bituminous mix, and other materials.

For further information write to the Wacker Corp., Dept. C&E, Hartford, Wis., or use the Request Card at page 18. Circle No. 64.

Combination ac-dc welder provides up to 250 amps

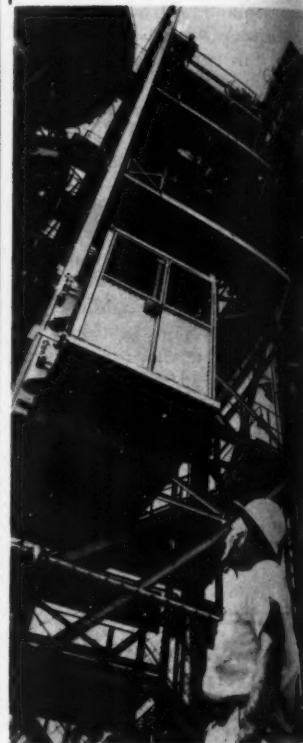
A 250-amp ac-dc transformer-rectifier type of welder, with ac ranges of 20 to 125 and 60 to 290 and dc spreads of 18 to 100 and 65 to 290, is offered by the Miller Electric Mfg. Co., Inc.

Designated Big Twin, the unit features a 250-amp rated output for both ac and dc at 30 volts on 40 per cent duty cycle or 200 amps at 40 volts on 60 per cent duty cycle. It operates from single-phase service for widest flexibility and maximum use.

Infinite current adjustments result from a new shunt-type transformer.

For further information write to the Miller Electric Mfg. Co., Inc., Dept. C&E, 718 S. Bounds St., Appleton, Wis., or use the Request Card at page 18. Circle No. 65.

Up In the Air?



Don't Climb—Ride In a Hawkeye Portable Elevator

Eliminate costly "ladder time" with the completely portable Hawkeye Elevator. Elevator can be completely dismantled and re-erected in a new location in a few hours. Entire operation can be made by your own maintenance crew.

Valuable sales territories still available for further information write to

HAWKEYE PRODUCTS CORP.
1013 So. State St.
Syracuse, New York

For more facts, circle No. 357

CONTRACTORS AND ENGINEERS

This portable office has 112 square feet of floor space. It is weatherproof and undercoated, and windows and Fiberglas roof insets provide light.



Portable field office offers plenty of space

A new portable field office is announced by Wells Cargo, Inc., Elkhart, Ind.

Designated Model 19-R, the unit has interior dimensions of 16x7 feet and a 19-foot over-all exterior length. Interior height is 6 feet 8 inches. Ruggedly constructed of steel and

plywood, the unit hooks up in 3 minutes for towing with car or truck, according to the manufacturer.

For further information write to Wells Cargo, Inc., Dept. H, Dept. C&E, 1503 W. Bristol St., Elkhart, Ind., or use the Request Card at page 18. Circle No. 72.

New compression machine has 500,000-lb capacity

Said to be the first low-priced compression machine with a capacity of 500,000 pounds, the new Forney Model QC-500 is designed specifically for testing 6x12-inch and 8x16-inch high-strength concrete cylinders.



Requiring a minimum of floor space, the machine can be used either in the laboratory or on the job site. Operation is said to be so simplified that even nontechnical personnel can achieve dependable results.

The manufacturer claims that the Model QC-500 will break the highest-strength specimens with a wide margin of safety and will maintain accuracy under continuous operation.

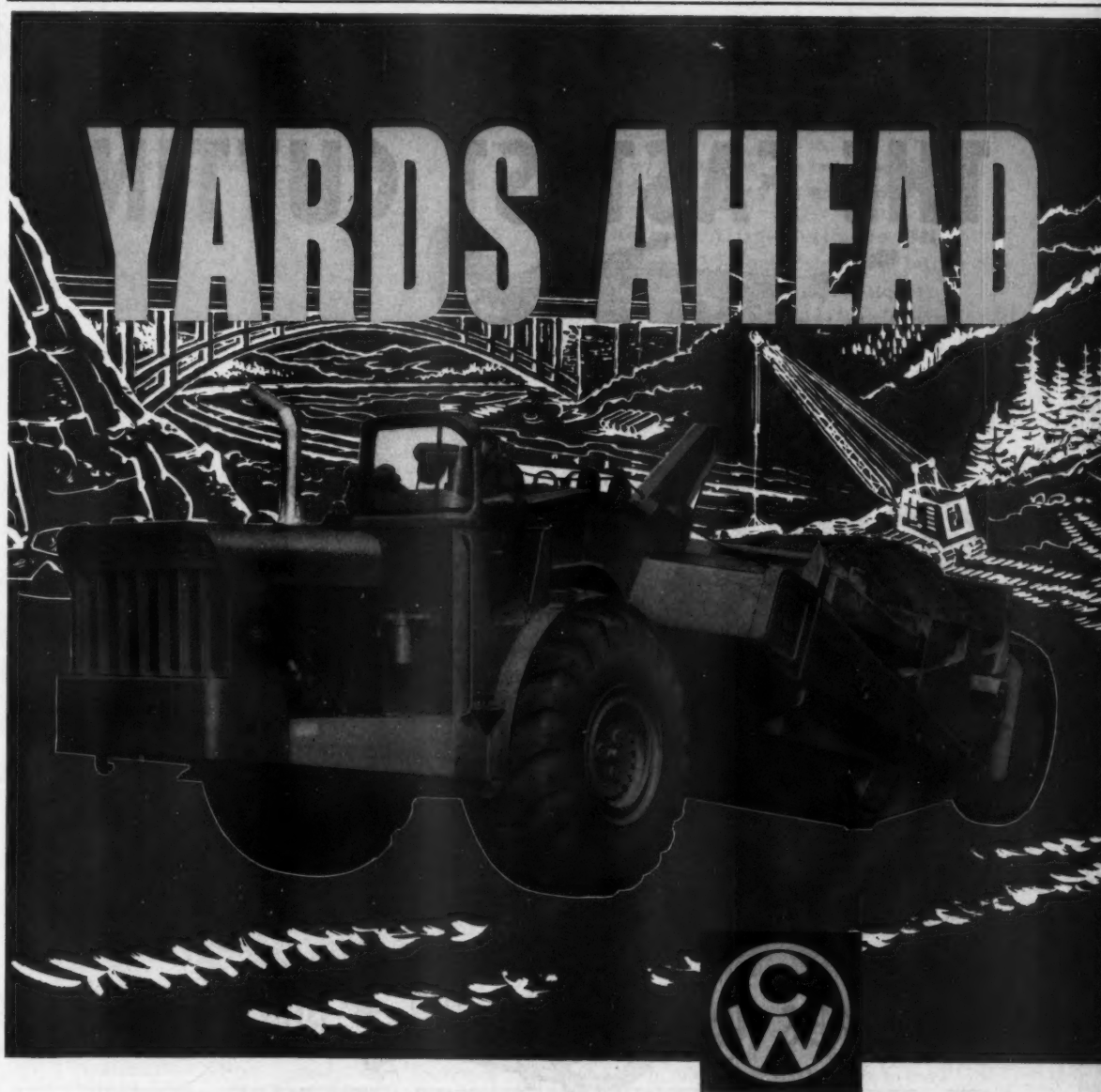
For further information write to Forney's Inc., Tester Division, Dept. C&E, P. O. Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 35.

Oversize valve extensions for off-highway tires

A complete line of oversize tire-valve extensions for use with rubber-base or screw-on repair valves is offered by the Dill Mfg. Co.

Designed to speed and simplify tire maintenance of off-the-road equipment, these extensions are available in a wide range of sizes and types. Installed, they extend the valve to an accessible position. The four types of valve extensions include rigid, flexible, semiflexible, and standard bore.

For further information write to the Dill Mfg. Co., Dept. C&E, 700 E. 82nd St., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 58.



CURTISS-WRIGHT MODEL

226

CW-226 SELF-PROPELLED SCRAPER

Capacities: 26 cu. yds. struck, 36 cu. yds. heaped, 78,000 pound rated load

SALES • SERVICE • PARTS
at your
CURTISS-WRIGHT DISTRIBUTOR

Throughout the cycle—from the easy loading, through the high speed travel, to the fast dump, you're YARDS AHEAD with Curtiss-Wright scrapers. Designed and built to meet the skyrocketing production demands of today's construction industry, the CW-226 gives users a daily output unmatched by any competitive machine. See how the CW-226 can give your job a production boost—Let your C-W distributor give you complete details on the "Yards Ahead" features of the Curtiss-Wright line.

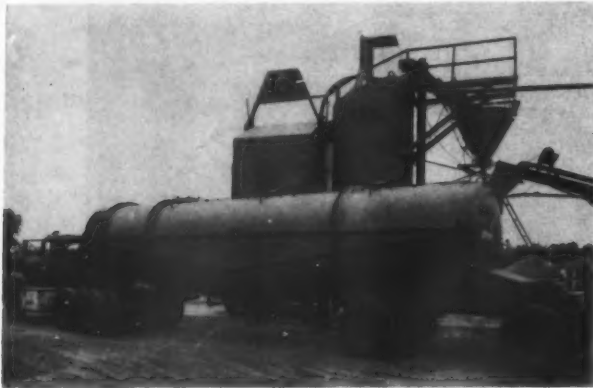
SOUTH BEND DIV. CURTISS-WRIGHT CORPORATION, SOUTH BEND, INDIANA

SOUTH BEND DIVISION

CURTISS-WRIGHT

CORPORATION
SOUTH BEND, INDIANA

For more facts, use Request Card at page 18 and circle No. 358



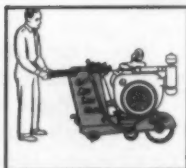
A new pneumatic bulk-materials trailer is introduced by Trailmobile, Inc. Basically, the unit is a lightweight pressure tank on wheels. For discharge of bulk cement, it requires only a single-stage compressor, which may be mounted on the tractor, the trailer, or at point of discharge. The tank is operated at 15 pounds psi, yet discharges cement at the rate of 1,300 pounds per minute. Discharge is controlled by a single lever. For further information write to Trailmobile, Inc., Dept. C&E, 31st and Robertson Ave., Cincinnati 9, Ohio, or use the card at page 18. Circle No. 91.

THE FASTEST CUTTING

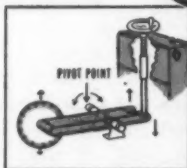
CONCRETE SAW BUILT!

The rugged Clipper 36 H.P. Model C-363, best ever built for production performance on highways, airfields — heavy trenching jobs. One of many Clipper saws for every job — every budget!

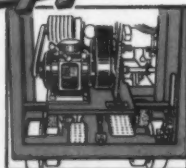
AND HERE'S HOW *Clipper* BUILDS THEM...



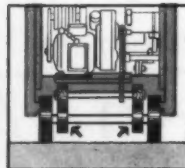
Our engineering staff really outdid themselves with Dual Balance Design—which simply means that this Big Saw is so perfectly balanced that one man can easily handle it. The engine weight is over the blade, preventing blade "ride-out". It's easier to use than any other saw—another reason why 4 out of 5 Buy Clipper!



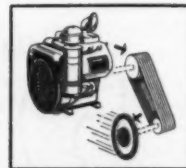
Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed... which gives you positive control of the blade at all times... and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method... not even hydraulic... gives such complete blade protection.



We bring you the most powerful Heavy Duty Transmission ever used on a concrete saw. To it we've added abrasive coated drive wheels (ours only) which transmit smooth continuous power and propels this rugged saw through the toughest jobs at speeds up to 26 feet per minute. Another reason why it's the fastest saw ever built!



Solved! The problem of curving compound buildup on the drive wheels. We added two Separate Contact Wheels which never touch the pavement and operate right off the transmission drive wheels. Result? Continuous operation without downtime for wheel clean-up. A good example of our experienced know-how, which means more practical, efficient equipment for you.



Selection of component parts gets the same intelligent thought given the design of Clipper Saws. That's why we chose the dependable proven 36 H.P. Wisconsin Engine, then added 6 reinforced V-Belts to give 100% sure power delivery. That's why we can guarantee that no other saw can match Clipper!

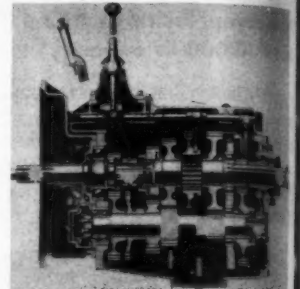
ONLY CLIPPER CONCRETE SAWS ARE... Unconditionally Guaranteed TO CUT FASTER—HANDLE EASIER and GIVE MORE FOOTAGE PER BLADE THAN ANY OTHER SAW!
THE CLIPPER MANUFACTURING CO. — 2803 East Warwick — Kansas City 8, Missouri
 Sold direct from Clipper offices and warehouses coast to coast. • Call your Factory Trained Representative for Free Demonstration.

For more facts, use Request Card at page 18 and circle No. 359

Heavy-duty transmission for off-highway service

A new heavy-duty transmission for off-highway service has been announced by the Fuller Mfg. Co.

The Model 5-G-1220 5-speed, high-capacity transmission is engineered for use in big earthmoving equipment, including prime movers pulling scrapers of 12 to 14-cubic-yard capacity. It is also designed for off-highway service in trucks equipped with engines of equivalent torque and horsepower.



Featuring long wear life and easier shifting, the new transmission is said to offer higher capacity than other models in Fuller's 1220 Series because axial thrust has been eliminated by use of spur gearing throughout the unit.

Available with overdrive gear ratios of either .636 or .744, the 5-G-1220 offers the following ratios in the intermediate gears: fourth, 1.00; third, 1.75; second, 3.36; first, 6.54; and reverse, 6.46. Weight is 752 pounds, and the transmission is 31 7/32 inches in length.

For further information write to the Fuller Mfg. Co., Transmission Division, Dept. C&E, Kalamazoo, Mich., or use the Request Card at page 18. Circle No. 46.

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 400 TONS

FOR:
PILE TESTING
UNDER-PINNING
BRIDGES
PIPE PUSHING



DESIGNERS and MANUFACTURERS OF Hydraulic Units For Special Applications

RICHARD DUDGEON INC.

789 BERGEN STREET BROOKLYN, N.Y. 11212
 • ST 9-4040 •

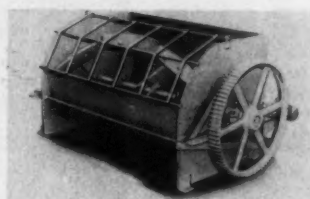
For more facts, circle No. 360
 CONTRACTORS AND ENGINEERS

New concrete-mixer line has long-life features

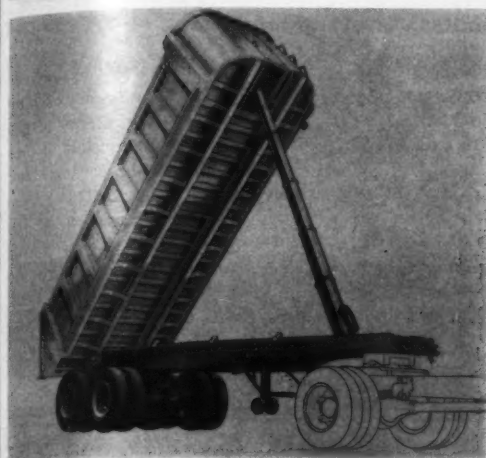
A new line of standard concrete mixers is offered by the General Engines Co.

The mixing bowls have heavy liners which are quickly renewable when worn. The ends are also lined for protection, and the paddles are easily adjustable to give the best and fastest mixing with minimum power. The discharge door can be operated from both the right and left-hand sides.

Dry-batch construction mixers are available in capacities from 15 to 60 cubic feet. Other sizes can be built to meet specifications.



For further information write to the General Engines Co., Dept. C&E, Route 130, Thorofare, N. J., or use the Request Card at page 18. Circle No. 135.



Galion supplies the entire aluminum trailer package, including body, hoist, and chassis with tractor kit, I.C.C. lights and reflectors, and mud flaps.

Aluminum trailer bodies effect weight savings

Substantial weight savings, larger payloads, fewer trips per job, and greater resistance to corrosion are listed as the major advantages of a new line of aluminum dump trailers announced by the Galion Allsteel Body Co.

Adaptable to any single or tandem trailer chassis, the line includes body styles available with or without longitudinal. These bodies are available with either front-mounted or twin underbody telescopic hoists.

For further information write to the Galion Allsteel Body Co., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 134.

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

now at your Allis-Chalmers dealer

the ONE FORTY FIVE— OUTSTANDING VALUE IN MEDIUM-POWER GRADERS

80 hp 21,540 lb



...with features you can't match
for the money on any grader

The new Allis-Chalmers ONE FORTY FIVE motor grader is built to outwork and outproduce any grader near its size...at a price you can't afford to overlook. An exclusive combination does it: high capacity front axle and throat clearance, big-grader power train, ROLL-AWAY moldboard, plus benefits that help an operator to do more work.

The ONE FORTY FIVE power train is built for long grading service. Simple, dry-type ceramic-lined clutch; constant-mesh transmission; heavy-duty gear train—all much stronger than you usually find in a grader this size.

Big clearance under the front axle straddles huge windrows without drag. Watch the ROLL-AWAY moldboard lift and roll the load. Check the load-clearing height from cutting edge to circle. You'll get more grading production than any other medium-sized machine can give you.

Now check these operator advantages. Platform is clean and roomy. Suspended pedals provide matchless foot room. Full visibility all around takes the strain out of operating. Toggle-type control levers allow ample road feel without wrist-snapping backlash.

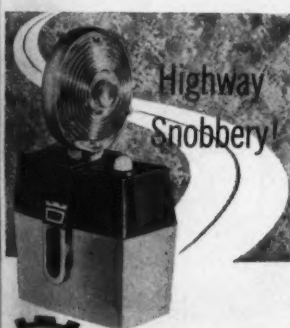
Your Allis-Chalmers dealer will show you an

eye-opening demonstration of the ONE FORTY FIVE. Then keep its low cost—and high performance—in mind when you're ready to buy. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ROLL-AWAY is an Allis-Chalmers trademark.



ONE FORTY FIVE
80 hp 21,540 lb approx.



PM FLASHER LIGHTS with Plug-in Transistor Circuit So good it's Guaranteed Forever!

Users of PM Transistor Neon or Incandescent Flasher Lights say: "They give better visibility...require less maintenance...and have four times greater bulb life, two times greater battery life, and 12 times greater lens life than other flashers—an extra job profit of \$3 per light per month for you." Adjustable flash rate, too!

Write for free demonstration. There's a PM Field Engineer near you.

Pacific
Mercury
14382 Burbank Blvd.
Van Nuys, Calif.



Manufacturers of the Thomas Electronic Organ
For more facts, circle No. 361

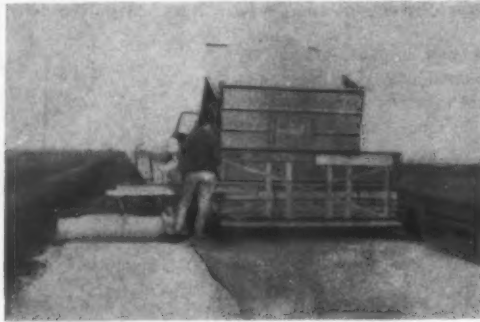
AUGUST, 1959

move ahead with **ALLIS-CHALMERS**
...power for a growing world



For more facts, use Request Card at page 18 and circle No. 362

The Power-Pack Model 605 widener has a strike-off blade that is adjustable to a width of 5 feet.



Road widener handles variety of materials

The Power-Pack Conveyor Co. has announced the addition of a new machine, the Model 605, to its line of power-operated backfiller and road-widening equipment.

Designed for spreading road-shoulder material, sand, stone, aggregate, or hot-mix on road-widening jobs, the unit quickly attaches to any truck by means of two cables that extend under the truck and hook to the front bumper.

The strike-off blade is adjustable

to any width from 2 to 5 feet. Placement of the material is controlled by a single operator. Three levers permit him to regulate the amount of material delivered to the conveyor, the speed of the conveyor belt, and a deflector at the discharge end of the conveyor.

For further information write to the Power-Pack Conveyor Co., Dept. C&E, 836 E. 140th St., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 56.

New compression-tension tester is portable unit

A portable combination compression-tension testing machine, which permits testing concrete cylinders or reinforcing bars for strength in a field or laboratory installation, is available from Soiltest, Inc.

The compression capacity in testing 6-inch-diameter standard concrete cylinders is 200,000 pounds. The hand-operated tester is entirely self-contained. No pressure or electrical connections are required.

The machine is also designed for testing specimens in tension up to the 100,000-pound load capacity. Tension grips are included.

Total weight of the tester is 500 pounds.

For further information write to Soiltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 74.

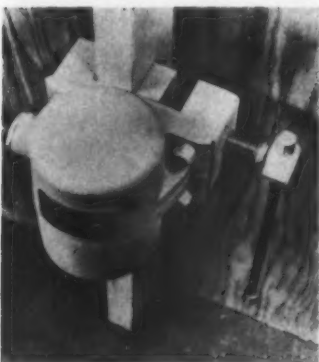
New vise-lock mounting for electric vibrator

Cleveland Vibrator's Model RC-5 electric vibrator features a new vise-lock mounting with a 2½-inch jaw opening.

A tough U-shaped head with a serrated steel plate clamps the RC-5 with a positive bite to 2×4-inch or larger wooden studs, and, according to the manufacturer, it works equally well on iron or steel structures.

Obtainable with a 9-foot heavy-duty cable, the unit, with all connections, is completely watertight and dusttight. It weighs 39 pounds over all and operates at 3-phase 60-cycle current from 110 to 550 volts.

For further information write to the Cleveland Vibrator Co., Dept. C&E, 2850 Clinton Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 106.



"I've seen our Ford Tandems pull out where others couldn't"

says Walter E. Carlson, President

Park Construction Company, Minneapolis, Minnesota

"We're still using the first Ford Tandems we bought in 1954!"

"In the construction business, our trucks really take a beating. They have to be rugged and durable, and that's why we like our Ford Tandems. On one of our earth moving jobs, for example, our Ford T-800's are in constant operation an average of ten hours each day, traveling about two hundred miles. They climb out of the pit, loaded with twelve yards of dirt, and walk right up a 12% grade. In fact, I've often seen our Fords pull out of places where other trucks couldn't.

"My father, who started the business back in 1910 with a horse and wagon, bought one of the first Ford Trucks ever made. That was over 40 years ago—and we've used Ford Trucks ever since. We pioneered the use of Ford Tandem Trucks in this area in 1954. Now we have a fleet of forty trucks, including thirty-five Fords.

"We completely overhaul our trucks at the end of each construction season. That way we keep them in top operating condition and they last longer. We like Ford service, too, because we don't have to tie up our money in a large parts inventory. We can always get the parts we need quickly from our Ford Dealer."



FORD TRUCKS COST LESS

Chain-and-flight conveyor offered in two models

A new, lightweight Economy chain-and-flight conveyor is announced by the Morgen Mfg. Co.

Measuring only 12 inches wide, it is designed to move all building materials that can be loaded on the unit by hand, at speeds up to 100 fpm.

The unit can be used in elevations from zero to 60 degrees. The basic 22-foot unit can be extended with 11-foot extensions to any desired length. Thirty-two and 42-foot lengths require no extra bracing.

Either gasoline or electric power can be used.

The low loading height, only 18 inches above the base, permits easy loading at extreme elevation. The drive system requires no adjustment, regardless of changes in elevation, states the manufacturer.

For further information write to the Morgen Mfg. Co., Dept. C&E, 1115 N. Broadway, Yankton, S. Dak., or use the Request Card at page 18. Circle No. 78.



Only 12 inches wide, the Morgen conveyor can be easily moved into hard-to-reach spots. Flights are carried on a heavy single chain at the center of the pan.

One day in five...GAS FREE!



'59 FORD PICKUPS GIVE 25.2% MORE MPG!

25.2% advantage delivered in Economy Showdown Tests means five days' driving on four days' gas

The nation's leading automotive research organization* proved and certifies that a '59 Ford Six Pickup will run five days on the same amount of gas the average competitive '59 pickup burns in four days.

The tests were made on 1959 six-cylinder ½-ton pickups of the six leading makes purchased from dealers—just as you would. The trucks were tested in every kind of driving—high and low speeds, open highway and city streets, even simulated door-to-door delivery. And in every test '59 Ford Sixes delivered more miles per gallon than any other make.

Here are the actual percentages:

HOW NEW '59 SIXES RATE IN GAS MILEAGE						
'59 FORD SIXES GIVE	25.2%	31.1%	9.6%	42.6%	22.0%	25.2%
	more miles per gallon than Make "C"	more miles per gallon than Make "I"	more miles per gallon than Make "G"	more miles per gallon than Make "D"	more miles per gallon than Make "S"	more miles per gallon than the average of all makes

What's the secret of Ford's economy? First, of all pickup sixes, only the Ford Six has modern Short Stroke design which reduces engine friction and thus requires less fuel. Second, to this modern engine, Ford has added a new economy carburetor to meter fuel more precisely in both high- and low-speed ranges.

Your Ford Dealer has the complete report of Economy Showdown U.S.A. See him and get the whole story firsthand.

Go FORDWARD for savings!

*Name available on request.
Send inquiry to P.O. Box 2687, Detroit 31, Michigan

Rectifier-type welder is automatic or manual

A new rectifier-type Aircomatic Fillerarc dc welder, available from the Air Reduction Sales Co., is said to combine the tested features of a rising characteristic power source with the advantages of transformer-rectifier design.

Specifically geared for use with Aircomatic (Air Reduction's gas-shielded metal-arc) welding applications, the welder is designed to supplement the company's line of motor-generator-type machines.

The welder is rated at 450 amp, dc, 40 volts, 100 per cent of duty cycle. Weight is 665 pounds; height, 28 inches; width, 25 inches; and length, 46½ inches.

For further information write to Air Reduction Sales Co., a division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 41.

Vibrating rammer offered for backfill compaction

Lightweight and portable, the Wacker Corp.'s Model VR 100-C Vibro-Rammer is said to be a tool for compacting any backfill material.

Compact design, plus almost negligible chassis movement, allows the rammer to be used in narrow places.



The machine weighs 115 pounds and is operated by one man. It is self-propelled by its own action.

For further information write to the Wacker Corp., Dept. C&E, Hartford, Wis., or use the Request Card at page 18. Circle No. 136.

For more facts, circle No. 363

TO OWN... LESS TO RUN...
LAST LONGER, TOO!

Announce new trencher for I-H utility tractors

A new Gear-Draulic trencher for International Model 340 and 460 utility tractors is announced by Auburn Machine Works, Inc. The new unit will trench at widths from 6 to 14 inches and at depths to 6 feet. Reported capacity is up to 800 feet of trench per hour.

According to the manufacturer, this trencher's forward propulsion drive utilizes a specially installed power takeoff that transfers power from the tractor through a combination variable hydraulic drive and speed reducer to a geared spacer that, in turn, returns the power back into the tractor's power train at a "creep" speed.

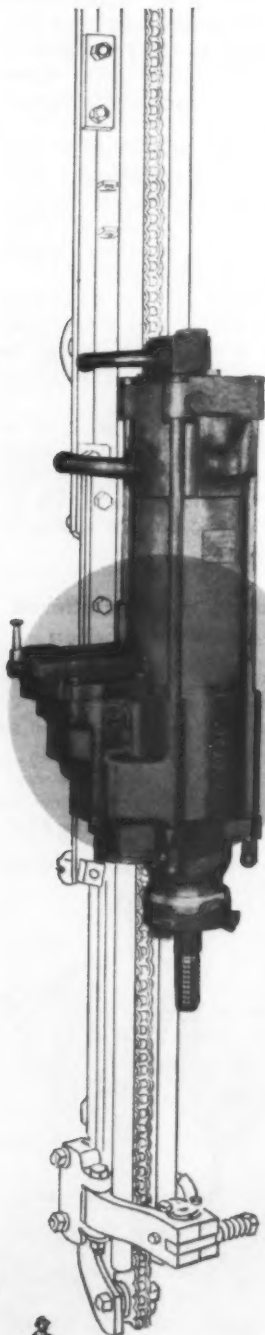
The variable hydraulic drive automatically adjusts the forward speed to intermittently changing soil conditions for uninterrupted smooth trenching. The unit features a non-clogging digging ladder with alternate right and left cutting teeth, which cut the trench and lift the dirt to ground level where augers convey it to both sides of the trench.

Interchangeable digging chains and booms are available to accommodate various widths and depths of trenches.

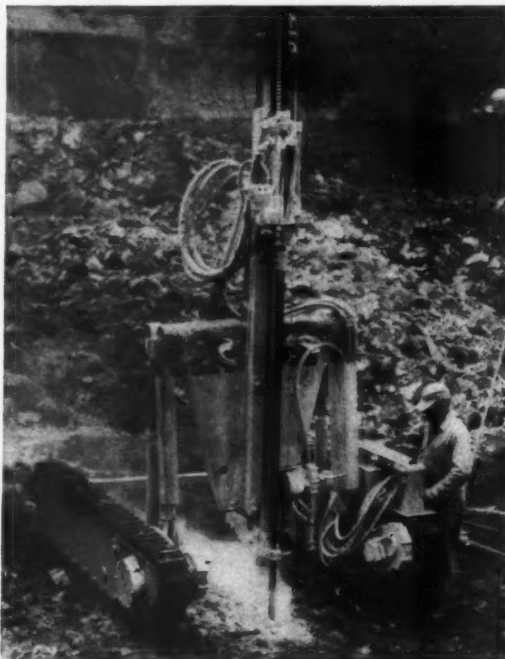
For further information write to Auburn Machine Works, Inc., Dept. C&E, Auburn, Nebr., or use the Request Card at page 18, Circle No. 60.



The new Auburn Gear-Draulic trencher has a rated digging capacity of up to 800 feet of trench per hour.



The 450-DR is available on several self-propelled carriers, including the completely automatic TDM Trac-Drill shown at the right.



Another Joy First

The 450 DUAL Rotation Drill

- 25% Higher Drilling Speeds
- Faster Steel Changes

In competitive demonstrations of 4 1/2" bore drills, the new Joy 450-DR not only drilled faster, but also finished blast-holes which the conventional reverse rotation machines could not bottom.*

Dual Rotation, which made this superior performance possible, is provided by a powerful vane-type air motor geared to the chuck. It provides a booster to normal drilling rotation, and gives extra rotation power while actually reducing the strain on the rifle bar.

Dual Rotation will also cut your costs because (1) there is no hammering action

while coupling or uncoupling—drill steel threads, couplings and striking bars last longer; (2) all four pawls in the 450-DR are used only for forward rotation, not two for drilling and two for reversing—excessive pawl wear is eliminated; and (3) with Dual Rotation, reversing is not rifle bar actuated, therefore rifle nuts cannot back off—less downtime.

Let us prove the superiority of the new Joy 450-DR Drill. Your nearest Joy Office or Distributor will be glad to arrange a demonstration of this remarkable new drill.

*Competitive test results available upon request.

C 7577-316



JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA



Portable Compressors



Trac Drills



Tungsten Carbide Rock Bits

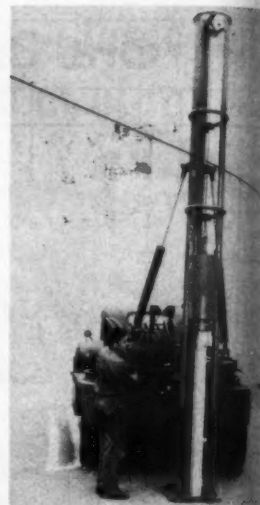


Hand-Held Rock Drills

For more facts, use Request Card at page 18 and circle No. 364

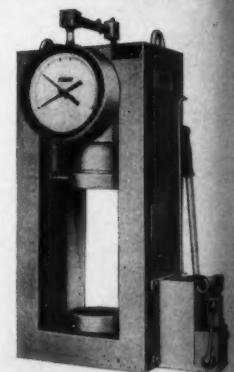
JOY

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.
In Canada: Joy Manufacturing Company
(Canada) Limited, Galt, Ontario



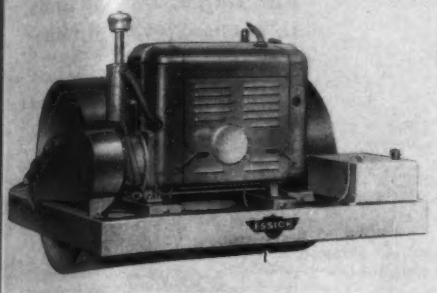
This completely self-contained hydraulic steel post driver is available from the Sterling Engineering & Mfg. Co. It is adaptable to all Sterling turntable bodies. A power-takeoff driven hydraulic pump is located in the truck frame. For further information write to the Sterling Engineering & Mfg. Co., Dept. C&E, Wilkes-Barre, Pa., or use the Request Card at page 18, Circle No. 97.

MODEL FT 20 JOBSITE CONCRETE TESTER



FOR: CYLINDERS, CORES, BLOCKS, BEAMS, CUBES, BRICK AND DRAIN TILE
FORNEY'S INC.
TESTER DIVISION
BOX 310, NEW CASTLE, PA., U.S.A.

For more facts, circle No. 365
CONTRACTORS AND ENGINEERS



New vibrating compactor features 72-inch width

The new Model VR-72-TEC high-frequency vibrating compactor is available from the Essick Mfg. Co. It features a slightly shorter over-all length and a larger-capacity fuel tank.

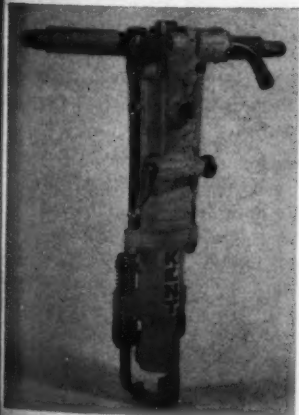
The engine is close coupled to the drive shaft and V-pulley, which drives the vibrating mechanism. Power is supplied by a Continental Model F226 water-cooled engine equipped with a master hand-operated clutch, and an automatic clutch controlled electrically from the operator's seat. The hand-operated master clutch between the engine and V-pulley permits idling and warming of the engine. When this lever is engaged, the automatic clutch goes into operation and engages the vibrating mechanism at a predetermined engine rpm. The VR-72 is also available with diesel power.

For further information write to the Essick Mfg. Co., Dept. C&E, 1950 Santa Fe Ave., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 104.

Improved rock drill offers three speeds

The Kent Air Tool Co. offers an improved rock drill that is said to offer greater durability at lower initial cost. Designated Model KS-48, it is a light-medium drill with a net weight of 50 pounds.

Featuring 3-speed operation and high penetrating power, this new drill is reported to perform effectively for



a wide range of work. The tool is made of heat-treated steel parts, and the working parts are chrome-plated. For further information write to the Kent Air Tool Co., Dept. C&E, Kent, Ohio, or use the Request Card at page 18. Circle No. 45.

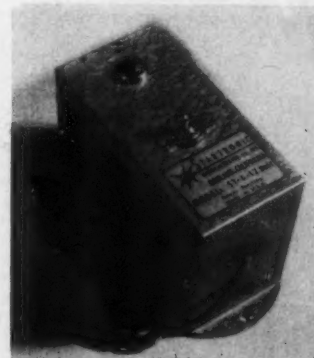
For more facts, circle No. 366-

With the 72-inch-wide Essick unit, it is now possible to compact up to a 17-foot-wide path on one pass with three VR-72 units in triple hookup.

New electronic starter for gasoline engines

Startronic, an electronic starter designed to provide instant starting for gasoline engines troubled by low battery power, chronic flooding, fouled plugs, or worn distributor points, is announced by the Startronics Mfg. Co.

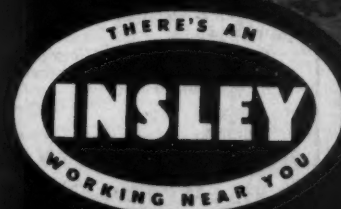
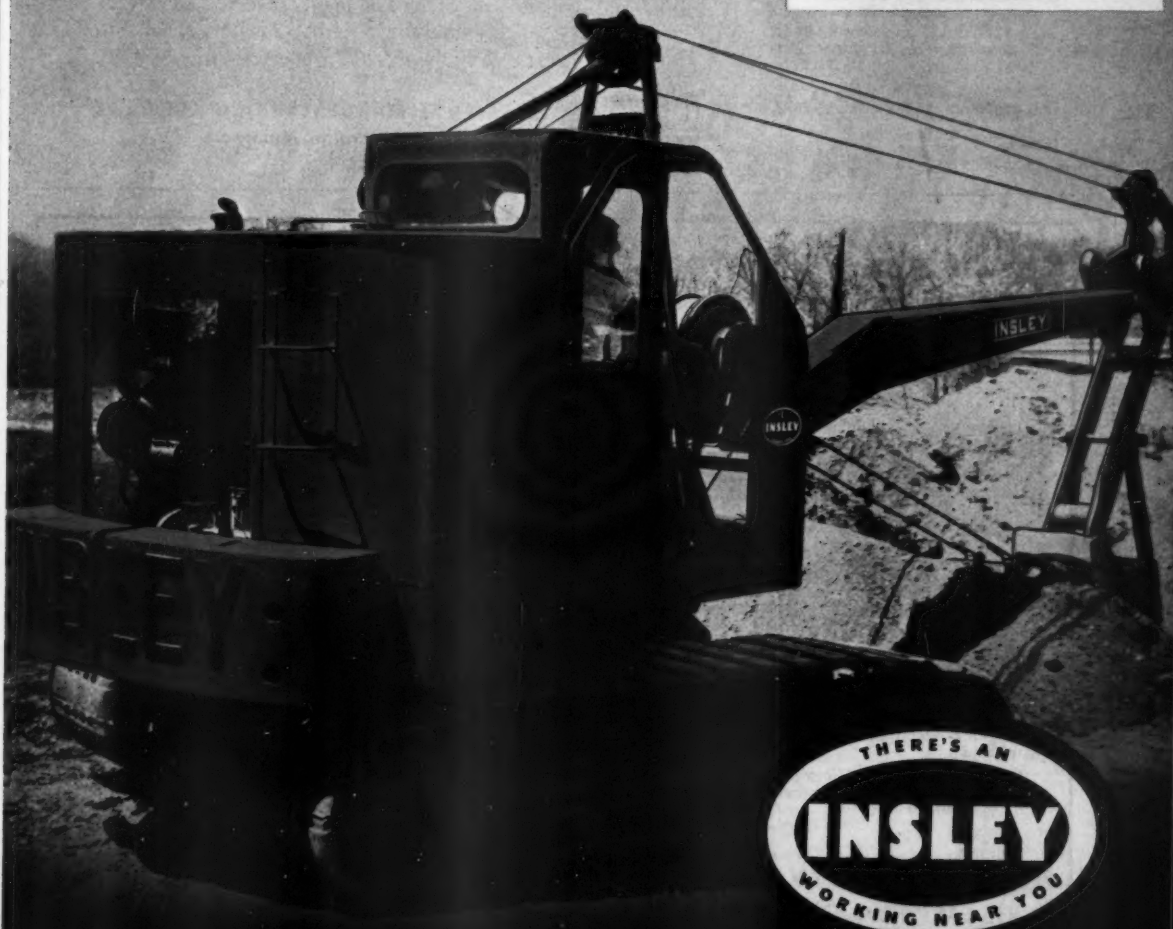
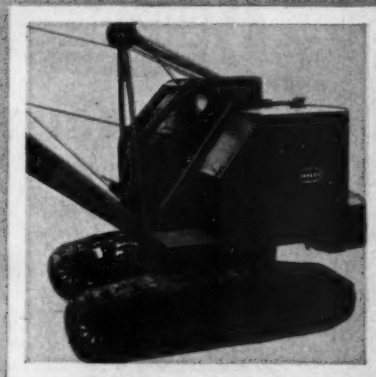
For further information write to the Startronics Mfg. Co., Dept. C&E, 1923 E. 14th St., Oakland 6, Calif., or use the Request Card at page 18. Circle No. 3.



A NEW LOOK with better than ever performance

Now you can have an Insley Type K or Type L machine with a modern WIDE VISION cab . . . and at no extra cost. This better all-round visibility lets the operator do more and do it more safely.

If you haven't looked inside an Insley Type K or Type L lately, you've missed a lot of other design improvements, starting with a spring cushion seat for the operator. Make a date with your Insley distributor today. Let him give you the full facts. The Insley Line includes excavators and cranes from 5 to 45 tons in capacity.



INSLEY MANUFACTURING CORPORATION

General Offices • Indianapolis 6, Indiana
West Coast Division • Los Angeles 54, Calif.



More power and new styling are features of the new heavy-duty International 6-wheel Model BCF-174. Rated up to 30,000 pounds gvwr, this series is offered with a standard 6-cylinder engine or with optional 193-hp low-stressed V-8. Wheelbases range from 137 to 185 inches. A wide range of transmission, axle, and other component options is offered for maximum truck-to-job specialization. For further information write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago, Ill., or use the Request Card at page 18. Circle No. 132.

EQUIPMENT HAULING *the easy way!*

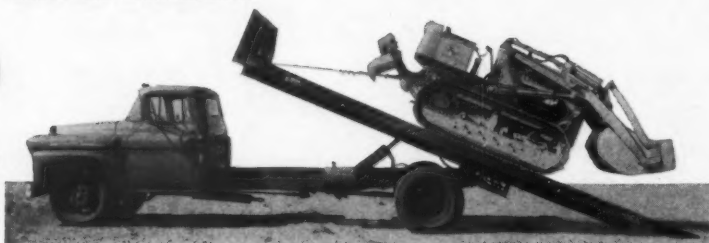
HAUL MEDIUM WEIGHT CONSTRUCTION EQUIPMENT, PORTABLE BUILDINGS, TOOLS, AND MACHINERY EASILY AND ECONOMICALLY.



RAMP HOIST WITH WINCH

- Fits all trucks 84" to 154", cab to axle.
- Hydraulically operated with controls at the side of the ramp.
- Mounts without removing truck frame cross member.
- Load rating—up to 12 tons.
- Rugged power hydraulic winch operated off truck power take-off.
- Available with wood or steel platform with steel approach plate and steel cab protector.
- Hinge point located over rear spring shackle for better stability and less stress on truck frame.

AVAILABLE ALSO IN HEAVY DUTY MODELS FOR TANDEM AXLE TRUCKS



SCHWARTZ MAKES IT A ONE-MAN JOB!

Now, with a SCHWARTZ RAMP HOIST, one man can load, transport, and unload those hundred and one pieces of equipment that do not justify the use of heavy duty low-boy trailers. With the ramp lowered, both mobile and other equipment can be winched onto the ramp and safely transported. The low cost of the SCHWARTZ RAMP HOIST will be quickly paid for in savings on time and labor.

WRITE TO DEPT. RH-20 for complete information.



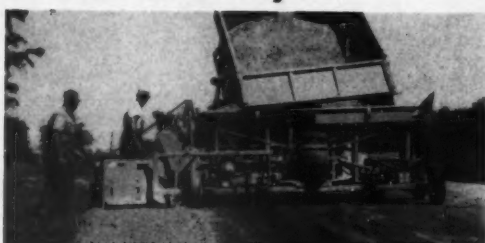
SCHWARTZ MANUFACTURING COMPANY
Lester Prairie, Minnesota

For more facts, use Request Card at page 18 and circle No. 367

On Road Work throughout the country...



Power-Pack Model 600's are being used to backfill miles of drainage trenches, on the new North-South Thruway in Ohio . . . 15 of them are cutting costs and keeping the jobs on schedule.



Power-Pack Model 605 speeds up widening and shoulder work for a county highway department in Tennessee. Here a 4-foot-wide shoulder 6 inches in depth is being placed at the rate of 600 feet per hour.

Power-Packs are cutting costs!

All across the country, on new highway construction and on road widening jobs too, you'll find Power-Pack Hopper Conveyors doing some work no other machine can do. Owners report savings up to 500% over previous methods on backfilling and road widening work.

On jobs such as backfilling one operator and a Power-Pack will unload sand, gravel, cinders or aggregate at the rate of 180 tons per hour, placing the mate-

rial accurately in the trench without waste or hand labor cleanup. On road widening and shoulder work, state, county, city and township highway departments rely on Power-Pack to save time and money on their maintenance jobs.

If your job requires backfilling, road widening or shoulder work, see the Power-Pack dealer in your area or write direct to arrange for an on-your-job demonstration.



POWER-PACK CONVEYOR CO.

836 EAST 140th STREET

GLENNVILLE 1-7670

CLEVELAND 10, OHIO

For more facts, use Request Card at page 18 and circle No. 368

Add single, 2-stage units to vertical jet pump line

Single and 2-stage vertical jet pumps have been added to the line of Rapidayton Jetstars made by The Tait Mfg. Co., Dayton, Ohio.

These pumps are said to be especially well suited to single-pipe applications on 2, 2½, and 3-inch wells.



The single-stage model is available in 1/3 and ½ horsepower, is designed for wells 20 to 80 feet in depth, and delivers up to 810 gph.

The 2-stage pump is equipped with ½, ¾, and 1-hp motors, reaches 150 feet, and offers up to 965 gph. The two impellers give full capacity at 60 pounds pressure.

For further information write to The Tait Mfg. Co., Dept. C&E, 180 N. Webster St., Dayton, Ohio, or use the card at page 18. Circle No. 137.

Portable water cooler has split-unit design

The Igloo Corp. offers a split-unit "Texas-type" 10-gallon water cooler.

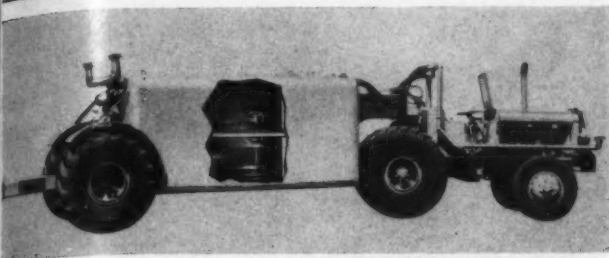
The interior is divided into two semicircular portions, one for the ice and one for the water. A lid covers the water section, and the spigot is tapped into the same side.

Available in standard, heavy-duty and stainless-steel-lined series, the unit is 23¼ inches high and 15 15/16 inches in diameter, has a 12-inch opening, and weighs 22 pounds.

For further information write to the Igloo Corp., Dept. C&E, P. O. Box 8047, Memphis 4, Tenn., or use the Request Card at page 18. Circle No. 24.



CONTRACTORS AND ENGINEERS



Clark Water-Cators are self-contained portable units featuring a hydraulically driven pump, eliminating outside engines and unnecessary piping.

Plastic-coated paper for concrete curing

A new, white plastic-coated reinforced paper for curing on highway and airport concrete is announced by the American Sisalkraft Corp. The product is said to combine the best features of reinforced-paper curing and plastic curing into one product, yet at no additional cost.

According to the manufacturer, the combination of tough reinforced paper and plastic coating means maxi-

mum re-use performance and better moisture retention. Stronger curing blankets and easier handling are other features claimed for the new product, which is available in standard widths from 9½ to 25 feet.

For further information write to the American Sisalkraft Corp., Dept. C&E, 55 Starkey Ave., Attleboro, Mass., or use the Request Card at page 18. Circle No. 61.

Water wagon converts to transport unit

A powered water wagon, known as the Clark Water-Cator, is announced by the Koehring Co. of California.

Used primarily for the application of compaction water in highway and street construction, the Water-Cator also becomes an efficient transport unit when desired.

Both Models 300 and 580 are self-contained portable units that are adaptable to fit any make truck of sufficient power. A hydraulically driven pump, a self-cooling feature, is submerged directly in the tank itself, thus eliminating outside engines and unnecessary piping.

The unit can be fitted with either 2 or 4 adjustable spray heads incorporating positive shutoff, plus direction and volume control. Water flow is regulated by starting and stopping the pump with a control valve in the truck cab.

The Model 300 has a 3,000-gallon capacity, while the 580 can handle 5,800 gallons. Other sizes of tanks are available.

For further information write to the Koehring Co. of California, Dept. C&E, 2200 Country Club Blvd., Stockton 4, Calif., or use the Request Card that is bound in at page 18. Circle No. 139.

Hydraulic pipe cutter is heavy-duty unit

A new heavy-duty hydraulic pipe cutter is announced by the Wheeler Mfg. Corp.

According to the manufacturer, the cutter will cut plain or lined cast-iron water main in diameters from 4 to 12 inches; standard or extra-heavy soil pipe from 6 through 15 inches; terra cotta or clay tile from 6 through 36 inches; and Transite pressure pipe from 6 through 10 inches.

For further information write to the Wheeler Mfg. Corp., Dept. C&E, Ross Road, Ashtabula, Ohio, or use the Request Card at page 18. Circle No. 40.



TAKE-CHARGE D9

—ONE BIG REASON KEYSTONE MET AND EXCEEDED PRODUCTION SCHEDULES!

This giant Cat D9 Tractor with No. 9S Bulldozer and No. 9 Ripper is working on the Prineville Dam—Crooked River Project about 20 miles S.E. of Prineville, Oregon. Here it is busy on the side-hill excavation of a 3,000-foot-long access road. Says Project Manager Art Chinn of the Keystone Construction Co. Inc. & Associates: "We are meeting and exceeding expected production schedules. Our D9 was bought primarily to pushload DW21s, but we also find it a high producer on other jobs."

That's the key to this take-charge giant's value—high production. Whether 'dozing, ripping or pushloading, the D9 has the capacity to handle more work with less down time at lower operating cost than any other earthmover. Many features contribute to its ability to get a lot of work done fast day after day. Here are just a few:

Power steering and power brakes provide fast, positive response and ease of operation that help an operator maintain production anywhere.

Exclusive oil clutch provides up to 2,000 hours of service without adjustment—equal to about 12 months' "adjustment-free" operation.

Dry-type air cleaner removes 99.8% of all dirt from intake air during every service hour. Can be serviced in 5 minutes. Cuts maintenance time and costs.

Lifetime lubricated rollers and idlers never require further lubrication until time for rebuilding.

For your big jobs, you can't beat a D9. And you can't beat the backing you get from your Caterpillar Dealer. He's ready round-the-clock to help you meet and whip production schedules with prompt service. See him for complete information about the D9, available with direct drive or torque converter. Ask him to demonstrate this giant on your job.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**BOOST
PRODUCTION WITH
A TAKE-CHARGE D9**

For more facts, use Request Card at page 18 and circle No. 369

Circular saw blade for plywood formwork

The Disston Division of H. K. Porter Co., Inc., has announced a circular saw blade developed for cutting



plywood smoothly. The manufacturer claims it ends the need to fill rough, splintered plywood with wood putty.

The saw teeth are extra sharp, with alternate sheer bevels for free, smooth cutting. Saw scream is eliminated and the flutter minimized, the company reports.

Hollow-ground, the blade is said to give clearance for reduced friction and long life, while a thick collar on the blade gives it maximum rigidity.

For further information write to the Disston Division, H. K. Porter Co., Inc., Dept. C&E, 610 Tocony, Philadelphia, Pa., or use the Request Card at page 18. Circle No. 62.



Lower the Cost of Concrete Construction

Place structural concrete anywhere on the job at great savings. New AIRPLACO Concrete Placers provide a low-cost, highly flexible method of conveying and distributing concrete. Keep transit-mix trucks out of the mud. Get a better concrete pour in those hard-to-get-to points, quickly, easily, and best of all, profitably.

COMPLETE LINE



ADVANCED DESIGN FEATURES

- Handles All Standard Mix Structural Concretes and Lightweight Concretes
- Easy to Operate
- Perfect for Big and Small Jobs—production range up to 30 cu. yds. per hour
- Portability To and From the Job
- Mobility On the Job

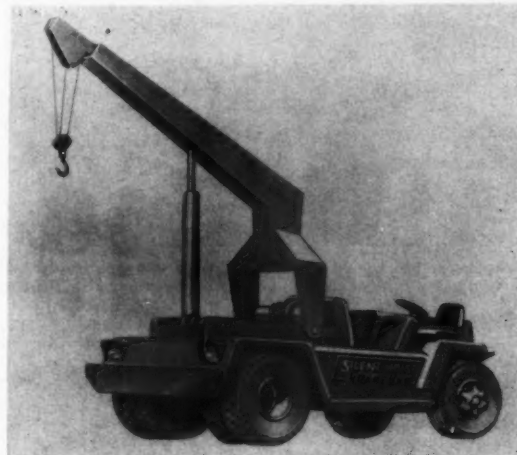
A Free Service For You

Our engineering and technical staff is available at anytime for consultation. Our years of experience have saved thousands of dollars for others. Let us help you. Write, wire or phone when you have a problem.

Plus FREE BROCHURE

AIR PLACEMENT EQUIPMENT CO.
1007 WEST 24TH ST. • KANSAS CITY 8, MO.
WORLD'S LEADING MANUFACTURER OF "ADVANCED DESIGN" PNEUMATIC PLACING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 370



Utility crane features 360-degree boom swing

The Silent Hoist & Crane Co. has introduced a new 360-degree swing-boom Krane Kar, a gasoline-operated rubber-tire unit with continuous revolving crane that picks up its rated capacity and travels with the load. A fully mobile unit, this new Krane Kar is operable without the use of jacks or outriggers.

The new 360-degree boom rotation crane is available in two sizes, one with a 12,000-pound capacity and the other with a 20,000-pound capacity. Both models have such regular Krane Kar features as dual-load tires, to protect against tire blow-out upsets, and boom location well forward on the chassis, so that the entire boom

length is available for unobstructed working reach.

The crane design incorporates a precision ball-bearing turret for boom swing; a full floating differential planetary-gear traction axle that provides nonspin characteristics for extra traction; continuous hydraulic manifold for oil-pressure supply for hoisting, topping, and boom telescoping; and a power-shift transmission combined with a torque converter.

For further information write to the Silent Hoist & Crane Co., Inc., Dept. C&E, 841-877 63rd St., Brooklyn 20, N. Y., or use the Request Card that is bound in at page 18. Circle No. 50.

Semi-dump trailers offer capacities from 16 yards

Jacob Press' Sons, Inc., announces a series of semi-dump trailers available in 18 to 24-foot lengths, with capacities of 16 yards and up.

Among the features in these new units are: double cap top rail; I-beam

frame; improved hoist packing; choice of front-mount or underbody telescopic hoist; rear cross members and rear standards welded to an integral unit constructed from steel plate. The 20-yard body measures less than

Need HOSE in a HURRY?

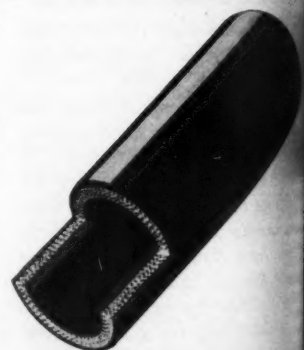
Suction • Water • Steam
Air • Multi-Purpose
Discharge • Pile Driver

Wherever your job is—whenever you need hose—there's a Continental Warehouse nearby stocked to give you any kind of hose you want—when and where you want it.

There's no need to wait for distant shipments—no need to stop the job—no need to lose profits.

Any time you need hose call Continental. You'll like the fast service and dependable quality you get from these warehouses:

BALTIMORE, Md.	CLEVELAND, Ohio
BOSTON, Mass.	DETROIT, Mich.
CHICAGO, Ill.	MEMPHIS, Tenn.
	PHILADELPHIA, Pa.
	ST. LOUIS, Mo.



CONTINENTAL RED-STRIPE AIR HOSE
Made to take severest punishment in mines, quarries and tough construction jobs. Up to 8 ft. of high-strength hose fabric. Won't weaken under pressures to 250 p.s.i. Oil-proof, neoprene tube. Sizes from 1/2" thru 3". Ask for catalog showing complete line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and CLOTHING.

HOSE by CONTINENTAL

CONTINENTAL RUBBER WORKS • 1989 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

For more facts, use Request Card at page 18 and circle No. 371

CONTRACTORS AND ENGINEERS

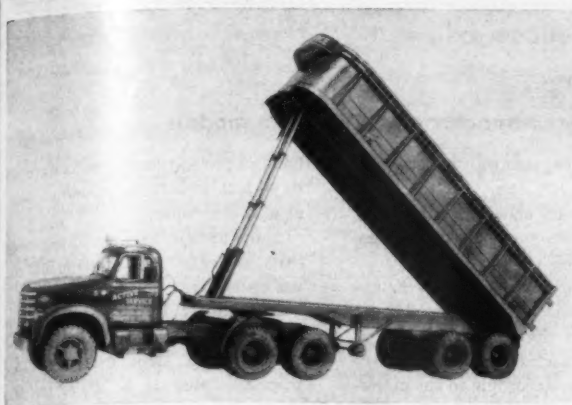
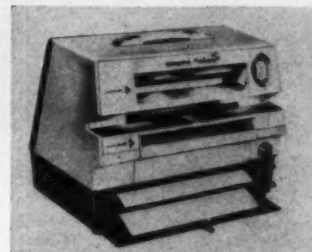
New portable photocopier is multipurpose unit

A portable photocopier for handling papers and films up to 9 inches wide and any length is announced by Ampto, Inc., a subsidiary of the Anken Chemical & Film Corp.

Known as the Ampto "Nine," the 18-pound unit can be used for the straight diffusion transfer (peel-apart) exposures and processing, and with the new single-sheet Plenacopy process whereby an unlimited number of copies can be made from a single negative.

There is no mixing of liquids; a plastic container of ready-mixed solution fits inside a hinged lid at the rear of the machine.

For further information write to Ampto, Inc., a subsidiary of the Anken Chemical & Film Corp., Dept. C&E, Newton, N. J., or use the Request Card at page 18. Circle No. 19.



Offered in 18 to 24-foot lengths, new semi-dump trailers feature capacities of 16 yards and up.

9 feet from ground to top of sides, according to the manufacturer.

For further information write to Jacob Press' Sons, Inc., Dept. C&E, 501 W. 33rd St., Chicago 16, Ill., or use the card at page 18. Circle No. 12.

Concrete gun designed for transit-mix loading

The Model PM-2-TM transit-mix rig for the pneumatic application of concrete is offered by the Blastcrete Co., Inc.

Designed to handle a wide variety of concrete work, the unit moves easily between jobs and sets up quickly for immediate operation. According to the manufacturer, it is easily towed and spotted into position by most pickup trucks.

Since it is loaded directly from transit-mix equipment, this rig needs only an adequate supply of compressed air to begin operation.

For further information write to the Blastcrete Co., Inc., Dept. C&E, 323 58th St., Los Angeles 11, Calif., or use the Request Card at page 18. Circle No. 138.

GALION 12-Ton Pneumatic-Tire Roller



Only Galion offers EQUA-MATIC front end construction

Through the automatic balancing action of three king pins, safe roller support is always assured when working over uneven or sloping ground. Galion's exclusive EQUA-MATIC design provides an equalizing movement straight up and down of all five steering wheels, and an oscillating up and down movement of the end wheel pairs. Thus, firm compacting contact is maintained with the surface at all times by the five wheels.

plus 18 other important features

- ROLL-O-MATIC or standard gear shift drive.
- SYNCHRO-MESH transmission.
- UNITIZED assembly provides easy access and servicing.
- AUTOMOTIVE-type hydraulic steering.
- LARGEST ballastable capacity in relation to overall size—in excess of 24,000 lbs. total weight with wet sand ballast.
- EIGHTY horsepower gasoline engine.
- HEAVIEST construction—8,400 lbs. metal weight.
- LOW center of gravity.
- 100% COVERAGE—treads of the nine tires overlap.
- WIDE RANGE of speeds—same range forward and reverse.
- SHORT drive shaft.
- DOUBLE drive chains to each pair of drive wheels.
- FOUR-WHEEL hydraulic service brake and independent parking brake.
- EXCELLENT visibility for operator.
- SHORT turning radius.
- FOUR large doors for ballast removal.
- SWIVEL seat, fully adjustable.

THE GALION IRON WORKS & MFG. CO.
General and Export Offices—Galion, Ohio, U.S.A.
Cable Address—GALIONIRON, Galion, Ohio



GREATER STABILITY

Maximum stability and support across the entire front end of the roller is achieved by GALION'S three-point king pin suspension of the five steering wheels. PATENT PENDING.



SYNCHRONIZED 5-WHEEL STEERING

Each of the five steering wheels is adjusted to always steer in its own true arc. This design eliminates the pushing and gouging of material which results when no provision is made to compensate for arcing variations in multiple-wheel steering.



EASY SERVICING

Unitized assembly permits each wheel and wheel brake to be serviced individually, as well as the oil-tight double drive chains. The entire power train can be removed as a unit.

Write for literature.



MOTOR GRADERS & ROLLERS

For more facts, use Request Card at page 18 and circle No. 373

DRILL CONCRETE IN SECONDS

Instead of Hours with PENNDRILL

Holes can be drilled thru any type masonry material—concrete, marble, brick and tile; including reinforcing bars or other steel encountered. Using diamond bits as the cutting agent, holes are drilled faster and at a lower cost than by any other method. Penn-drill equipment is designed for drilling holes vertically, horizontally or at any angle. Fast cutting, long life diamond bits in stock from 1/16" to 14" in diameter. Millions of holes have been drilled with Penn-drill bits, cutting job costs up to 60%.

Write for illustrated literature

PENNSYLVANIA DRILLING CO.
MASONRY DRILL DIVISION
1201 Banksville Road, Pittsburgh 16, Pa.

For more facts, circle No. 372

AUGUST, 1959



The Kelley power tamper is available in models with 18 and 30-inch shoes.

Vibratory compactor offered in two models

Two power tamper models, one with an 18-inch shoe and the other with a 30-inch shoe, are offered by the Kelley Machine Division of the Wiesner-Rapp Co.

These portable, gasoline-engine-driven tampers are recommended for fast, efficient vibratory compaction of granular soils and bituminous surfacing mixtures. According to the manufacturer, Kelley tampers make 2,400 continuous tamping cycles per min-

ute and propel themselves forward to 60 feet with the compacting force of a 12-ton roller.

Both models can be fitted with exhaust-heater shoe attachments for use on asphaltic mixes.

For further information write to the Kelley Machine Division, Wiesner-Rapp Co., Dept. C&E, 283 Elmman Ave., Buffalo, N. Y., or use the Request Card at page 18. Circle No. 47.



Proved on the toughest clearing and construction jobs

Matched to track-type or high speed earthmovers

Rome Disk Plowing Harrows are used on all the Turnpike Jobs and many of the new Interstate Highway Jobs to:

AERATE the borrow pits, and fill after a rain so the earthmovers can get to work hours sooner.

CUT and mix the fill when water must be added.

LOOSEN and smooth the fill surface to assist in the bonding of new lifts.

BLEND layers of stone and other base material.

MIX soil cement and sand asphalt base work on secondary roads.

Make the Rome Disk Plowing Harrow a member of your construction equipment team.

Ask your Rome-Caterpillar Dealer for a demonstration. Rome Plow Company, Cedartown, Georgia.

ROME.

YOUR ROME DEALER
IS YOUR
CATERPILLAR DEALER



For more facts, use Request Card at page 18 and circle No. 374

Announce tiltable roller for road patching

A new road-patching roller that is mounted under the frame of a truck and can be lowered to roll a smooth, permanent asphalt patch is announced by the Martin Co.

The Tiltable Patcher, as the unit is called, is raised or lowered by an electrically operated hydraulic pump. It makes a permanent road repair by using a controlled compaction pressure maintained by hydraulic pressure against the weight of the truck. To match the roller angle of operation to the slope of the road, the roll is pivoted at the center so that it follows the road surface, regardless of the position of the truck.

A completely self-contained unit, it has two spring-tensioned scraper blades and a built-in sprinkler system that lubricates the roller. These two features prevent the asphalt from sticking to the roll.

While the machine adds only 700 pounds to the weight of the truck, it is possible to put over 3½ tons of pressure on the roller by using the weight of the truck, the manufacturer reports.

For further information write to the Martin Co., Dept. C&E, P. O. Box 372, Kewanee, Ill., or use the Request Card at page 18. Circle No. 10.

Lightweight rock drill is versatile tool

A new lightweight rock drill is announced by the Davey Compressor Co.

Known as Davey-Holman Model SL-9D, it has a net weight of 42 pounds, handles easily in any position, and is said to possess unusually high output work capacity. An outstanding tool feature is the ease with which it can be converted, without dismantling, from blower-type to blast-type or to wet-type with manual valve.

Over-all length of the SL-9D is 22¾ inches with retainer or 20¼ inches without retainer.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 140.

Gives a Man Giant Strength



CM PULLER

- **SMALL**
Lever is only 20½" long.
- **POWERFUL**
83 lbs. on lever* produces 3,000 lbs. at hooks. *1½ ton model.
- **VERSATILE**
"CM-Alloy" flexible welded chain. Lifts or pulls at any angle.
- **PORTABLE**
Made of aluminum alloy. ¼ ton model weighs only 14 lbs. Capacities ¼ to 6 tons.

A NATURAL FOR CONSTRUCTION WORK
The "CM" Puller will do a "thousand-and-one" jobs for you. It will do them faster, safer and far easier. The "puller" is compact... stores conveniently in a tool box. Lifetime lubricated. Every contractor should have one.



SEND FOR "CM" PULLER BULLETIN AND NAME OF YOUR LOCAL DISTRIBUTOR.

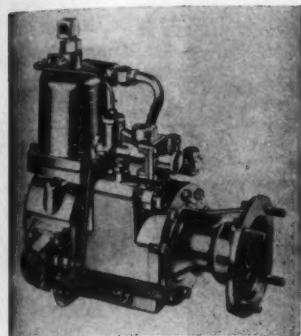
CHISHOLM-MOORE HOIST DIVISION
COLUMBUS McKINNON CHAIN CORPORATION
TONAWANDA, NEW YORK
REGIONAL OFFICES: NEW YORK, CHICAGO, CLEVELAND
In Canada: McKinnon Chain Limited, St. Catharines

For more facts, circle No. 375
CONTRACTORS AND ENGINEERS

Offer rotary compressor for automotive diesels

The Automotive Division of the Wagner Electric Corp. announces the development of a 12-cfm rotary drive-through compressor for use with automotive diesel engines.

The design of the compressor eliminates the use of thrust-absorbing components, and rotary seals operate with a minimum of loading for extended life. Improved channeling provides better oil circulation to all moving parts.



The new compressor features a lubricating system that circulates engine oil through the compressor during the non-pumping cycle and cools the compressor between cycles by completely changing the oil in the sump. The rotary-compression principle produces a dependable air reserve and gives rapid air-pressure recovery. According to the company, smooth, quiet, and very cool operation is the result.

For further information write to the Air Brake Engineering Department, Wagner Electric Corp., Dept. C&E, 6410 Plymouth Ave., St. Louis, Mo., or use the Request Card that is bound in at page 18 of this issue. Circle No. 141.

Announce mobile crane with 45-ton capacity

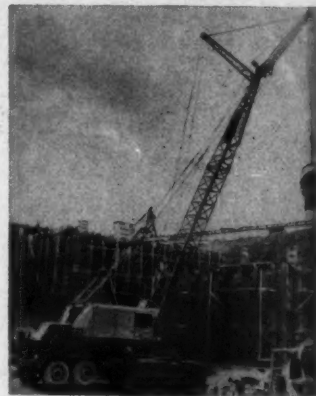
Manitowoc Engineering Corp. announces its Model 2800 mobile crane, said to be capable of handling a full "safety-rated" 45-ton load at a 15-foot radius. The unit converts easily and quickly into a clamshell or drag-line.

The basic lightweight, welded-alloy steel boom is 40 feet long, with pendant-type rigging and an open-throat boom point as standard features. Long booms for extra reach are available. Also available is an adjustable cantilever jib in lengths up to 50 feet.

Features of the unit's carrier include: dual-tandem rear and single-

tandem front axles; rigid, massive, removable outrigger side frames; full-time power steering; ample clearance over rough or soft ground; a large, modern, fully equipped cab; sturdy one-piece frame; massive ring gear and roller path; big, easily adjusted hook rollers; powerful air brakes; and strong aluminum-alloy outrigger pads.

For further information write to the Manitowoc Engineering Corp., Dept. C&E, 16th and River Sts., Manitowoc, Wis., or use the Request Card that is bound in at page 18. Circle No. 37.



The new Manitowoc 2800 mobile crane handles 45 tons at a 15-foot radius.

A Fruehauf Dump-Trailer For Every Tough Job!

Do The Work of Two or More Trucks—At Less Cost—With One of These Fruehauf Trailers



Cable Dumps—Simple mechanism—low initial cost—low upkeep—full use of bridge formula laws—low Trailer weight—up to 4,000 pounds of extra payload—unmatched maneuverability on rough ground or in tight places. Trailer can be dumped with tractor jackknifed up to 90° angle—cable mechanism can be used to pull either tractor or Trailer out of rut or hole—single or tandem axle units available.



Hoist-Type Dumps—Wide range of designs—steel units (shown above) or frameless aluminum units (shown below) with up to 3,500 weight savings—single or tandem axle suspensions—single or twin front-mounted or under-mounted telescopic hoists—sand and gravel units or rugged rock bodies.



Hopper-Type Dumps—For sand, gravel, aggregates—frameless high-tensile steel body—designed for the strain of rough terrain—steeply-pitched inner surfaces for fast unloading—gate trip mechanism with ten control settings for varied unloading speeds.



For Forty-Five Years—More Fruehauf Trailers On The Road Than Any Other Make!

World's Largest Builder of Truck-Trailers
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FRUEHAUF ALSO BUILDS A FULL LINE OF CARRYALLS, PLATFORMS, AND CEMENT AND HOT COMMODITY TANKS FOR CONSTRUCTION WORK!

For more facts, use coupon or Request Card at page 18 and circle No. 377

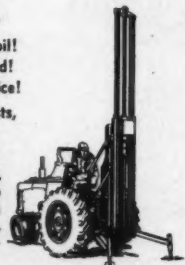
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INDUSTRIAL

- Dig ANY Soil!
- Positive Feed!
- Economy Price!

Ideal for poles, posts, pier-bases.

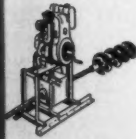
New INDUSTRIAL DIGGER cuts up to 6 1/2 feet through clay, shale, gumbo, tree roots and frozen ground.



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- Straight Holes!
- Holds to Grade!
- Own Power Plant!

Designed for mains, underground lines.



Tough HORIZONTAL DIGGER drills straight holes up to 48 feet through ANY soil. Skid-mounted, ready to go.

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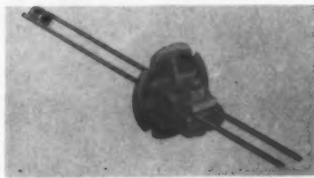
Phone 40
Dept. EC

For more facts, circle No. 376

AUGUST, 1959

Product Parade

Form tie for warped, other unusual walls



Forms for warped and other unusual walls can be tied efficiently with the Superior open-end tie-clamp assembly, reports Superior Concrete Accessories, Inc. The system permits the wales to be placed horizontally on sloped, battered, or warped walls, rather than parallel with the slope.

According to the manufacturer, horizontal wales may be placed and ties installed in half the time required for placing sloped wales, by eliminating the confusion and loss of carpenters' time when placing wales and ties in an apparently unnatural position.

The coil end of the tie, kept back from the exposed concrete face, is held in the conventional way with a coil bolt and flat washer. The open end is slipped through the tie clamp and is locked into position at any place on the rod by a few turns of the nut. An ordinary wrench is the only tool needed for assembly and stripping.

For further information write to

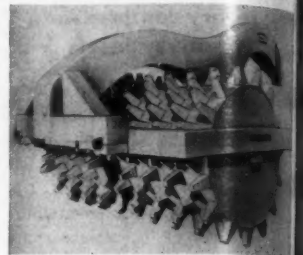
Superior Concrete Accessories, Inc., Dept. C&E, 9301 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 63.

New sheepfoot features special yoke tongue

A new heavy-duty sheepfoot roller designed for use with 4-wheel rubber-tire tractors is offered by American Steel Works.

The Model ADC 120 has an empty weight of 18,860 pounds and variable load weights. When ballasted with wet sand, the roller gives a weight of over 40,000 pounds.

The special yoke tongue can be ballasted and is available for various



makes and models of tractors. Drums are 60 inches in diameter and 60 inches in length.

For further information write to the American Steel Works, Dept. C&E, 1211 W. 27th St., Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 42.

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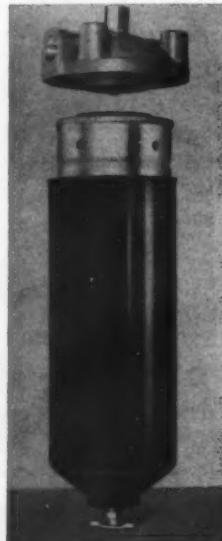
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For more facts, circle No. 378

Compressed-air filter removes moisture, oil

A new type of compressed-air filter that removes moisture, oil, and dirt by separation rather than absorption is available from the Fram Corp.



The filters are easily installed and may be used in air lines with maximum pressures up to 125 psig. They have very low initial pressure drop, according to the manufacturer.

For further information write to the Fram Corp., Dept. C&E, 55 Pawtucket Ave., Providence 16, R. I., or use the Request Card at page 18. Circle No. 142.

Small-head vibrator works in tight places

An electric-powered, flexible-shaft vibrator with a 1 1/4-inch-diameter head is announced by the Master Vibrator Co.

Called the Pencil, the unit is said to be especially handy for vibrating concrete in narrow forms, between closely spaced reinforcing steel, on all types of precast work, and on small pours.

Power is supplied by a 1-hp ac-dc motor that runs off 115-volt current.

The unit operates at 10,000 vpm.

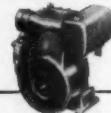
For further information write to the Master Vibrator Co., Dept. C&E, 168 Stanley Ave., Dayton, Ohio, or use the card at page 18. Circle No. 15.

HERE'S UNDISPUTED PROOF

FROM ENGINEERS WHO KNOW

up to 25% reduction in piston travel with Clinton Engines

The important thing is that you prove this fact to yourself. The features of any engine mean nothing until you have proved them to your own satisfaction and believe them to be fact. That's why Clinton invites you to make your own grueling torture test on any Clinton Engine mentioned below. We want you to prove to yourself beyond question that a Clinton Engine lasts longer. Write Clinton to make arrangements for an engine torture test.



TAKE A LOOK AT THE PROOF FOUND IN ACTUAL COMPARATIVE TESTS

	Clinton A1690	"A"	"T"
Piston Displacement	16.3	14.88	14.21
Bore	2 1/4	2 3/4	2 3/4
Stroke	2 3/4	2 3/4	2 3/4
RPM @ 4 1/2 Net BHP—70 lbs. PSI	3124	3422	3583
FPM Piston Travel	1367	1568	1568
Reduction in FPM @ 4 1/2 HP	13%	X	X



CLINTON ENGINES CORPORATION

(Formerly Clinton Machine Company)

Engine Division • Dept. 21-E • Maquoketa, Iowa

For more facts, circle No. 379

THE MORSE-STARRETT WIRE ROPE CUTTER



Cutting capacities up to 1 inch, 1-1/16 inch, and 1-1/2 inch.

FAST

Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY

Anyone can operate it. The hammer principle eliminates any special skill requirements.

SAFE

The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE

Models for tool kit or stationary operation. Made in many sizes.

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CONTRACTORS AND ENGINEERS

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Announcements

A new light weight offered in a range of sizes in incandescent without that eliminates

The 1 and the months thick L rated standard design visibility

For 1 Pacific Burbank use the Circle No.

Competition

A new delivers at 100 minute announced

The power p maintenance

Reserve 1 1/4 gallon cover p

for, and possible

The 1 1/4-hp unit.

For the Ow Owston Card at



Announce new dome-head flasher warning light

A new dome-head flasher warning light with full 360-degree visibility is offered by Pacific Mercury. It is available in transistor neon or transistor incandescent models, and with or without the firm's Solarstat device that eliminates manual attention.

The light's flash rate is adjustable, and the unit is said to offer up to six months of battery life. The extra-thick Lucite lens of the dome head is rated shatterproof, and a special lens design reportedly more than doubles visibility.

For further information write to Pacific Mercury, Dept. C&E, 14052 Burbank Blvd., Van Nuys, Calif., or use the Request Card at page 18. Circle No. 75.

Compact hydraulic pump is high-pressure unit

A new 2-stage hydraulic pump that delivers 600 cubic inches per minute at 100 psi to 50 cubic inches per minute at 10,000 psi has been announced by the Owatonna Tool Co.

The OTC Vanguard is a compact power package designed for use with maintenance-shop equipment.

Reservoir capacity is 2 gallons, with 1½ gallons of usable oil. The common cover plate, on which the pump, mo-



tor, and valving are mounted, makes possible the use of different sizes of reservoir.

The standard universal motor is a 1½-hp 12,000-rpm 60/50-cycle ac/dc unit.

For further information write to the Owatonna Tool Co., Dept. C&E, Owatonna, Minn., or use the Request Card at page 18. Circle No. 57.

For more facts, circle No. 381→

Announce 2-way radio for on-the-job use

The Morrow Radio Mfg. Co. announces a 2-way radiophone designed to provide low-cost communications between foremen and trucks or crews working in separated locations. The new broadcasting band, formerly used by radio amateurs, requires no technical examination of the operator.

Orders can be issued or job progress checked over a range of 20 to 30 miles, the company states. The sets permit



truck-to-truck as well as truck-to-base contact, providing constant communication between the different units of any given job setup.

The new broadcasting systems operate on 27 megacycles, draw about 50 watts of power, and are available in different models for use with 6 or 12-volt dc or 117-volt ac power source. The sets operate on about 20 different frequencies, and built-in squelch circuits silence noise and background interference.

For further information write to the Morrow Radio Mfg. Co., Dept. C&E, 2794 Market St. N. E., Salem, Ore., or use the Request Card at page 18. Circle No. 92.



LORAIN MOTO-LOADER'S ONE-FOOT TRAVEL CONTROL INCREASES OUTPUT ON FLOOD CONTROL PROJECT

Faster trench backfilling is only one of the ways this husky 2-yard Lorain ML-157 pays off for Pascella Bros. of Dedham, Massachusetts.

With Lorain's exclusive one-foot travel control, the ML-157 shortens work cycles on the project's excavating and handling jobs. This agile Moto-Loader, with its superior control and balanced weight distribution, goes in and gets the load in a hurry . . . carries up to 7,000 pounds without bounce, jiggle or chatter.

Power booster steering simplifies maneuvering in the tightest places. Unique arm design lets operator see more, operate with maximum safety. Toggle in hoist lever permits "no hands" constant hoisting force, so that the operator can concentrate on bucket tilt control for bigger payloads.

Ask your Lorain distributor about the 2-yard ML-157, or the 1¾-yard Lorain ML-153 (6,000 pounds capacity). See how either one can build your profits.

THE THEW SHOVEL COMPANY, LORAIN, OHIO



One-foot travel control. By pivoting his foot to either of two adjacent pedals the operator controls direction—forward and reverse. Depressing pedal further controls speed. Both hands are free for steering and other operations. Loading cycle is faster.

LORAIN®

ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ¾- to 2½-yard capacity. Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes. Rubber tire front-end Moto-Loaders in 1¾- and 2-yard models.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

Powered outriggers and increased precision in load control are among the improvements in R. G. LeTourneau's new mobile electric cranes. The machines feature high-torque dc electric motors geared inside each wheel.



Mobile electric cranes set own outriggers

Two new mobile electric cranes that can set their own outriggers and be ready to lift capacity loads within 30 seconds are announced by R. G. LeTourneau, Inc.

Known as the Series R-30 and the Series R-45 cranes, they have capacities of 30 and 45 tons, respectively. All operating functions of both are electrically powered.

Individually operated, electric-powered outriggers form a level lifting platform on varied terrain and are controlled from within the operator's cab. Capacity loads are smoothly controlled through variable speed regulation of dc motors that power the hook

line and boom swing.

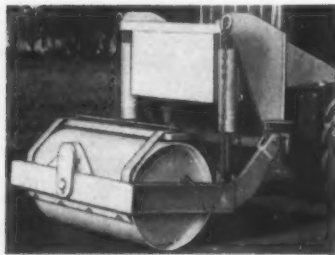
A single fingertip switch on the operator's panel controls electric-power steering and provides fast, precise maneuverability in tight operating quarters, according to LeTourneau.

Off-the-road mobility is made possible by individual dc electric motors geared directly to each wheel, and by extra-wide-base low-pressure tires that provide maximum flotation and traction.

For further information write to R. G. LeTourneau, Inc., Dept. C&E, 2399 S. MacArthur, Longview, Texas, or use the Request Card at page 18. Circle No. 6.

MARTIN GRADEROLLER

saves thousands of dollars in initial cost of roller



Contractors and public road builders are making substantial savings by equipping their motor graders for double duty with the Martin GraderollerR: low cost retractable roller fits behind the engine where it can be instantly lowered to serve as an all-purpose heavy-duty roller, or raised to free the grader for other duties.

HAS HIGH AVAILABILITY

A big feature that roadbuilders like about the GraderollerR is its availability. It's always handy, right along with the motor grader. One machine does two jobs. It's faster and completely self contained.

AN IDEAL PATCHER

The versatile GraderollerR is perfect for patching all types of surface on both minor and major roadbuilding jobs. Can be used for rolling shoulders, subgrades, soil cement, etc.

TILTABLE DESIGN

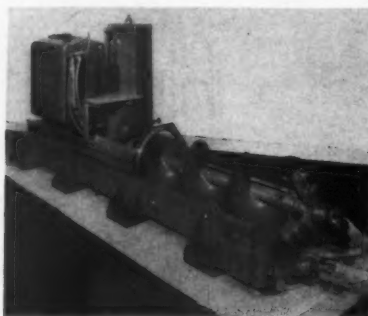
Stays on the level, regardless of position of motor grader. For complete details and name of your nearest dealer, write or call us —

progress through Research
• Design • Engineering



For more facts, circle No. 382

For more facts on these products, circle the indicated number on the Request Card at page 18.



This trench drill handles augers to 24-inch diameter.

Trench drills push pipe as far as 250 feet

A new series of trench drills capable of drilling 400 feet and pushing pipe as far as 250 feet has been introduced by The Salem Tool Co.

Designated Model 24-TD, the drill is powered by a 52-hp gasoline motor. Features include 4-speed transmission; electric starting; forward thrust of 30,000 pounds; and maximum torque at the auger of 6,500 foot-

pounds. The unit is equipped with variable hydraulic feed in a rigid frame for drilling accuracy. Pipe pusher and one guide are standard equipment.

For further information write to The Salem Tool Co., Dept. C&E, 769 S. Ellsworth Ave., Salem, Ohio, or use the Request Card at page 18. Circle No. 158.

BUILT-IN RUST PROTECTION



Blue Brute Air Tools give you a big money-saving feature—they resist rust and corrosion. The reason is an exclusive process: Blu-Coated Parts.

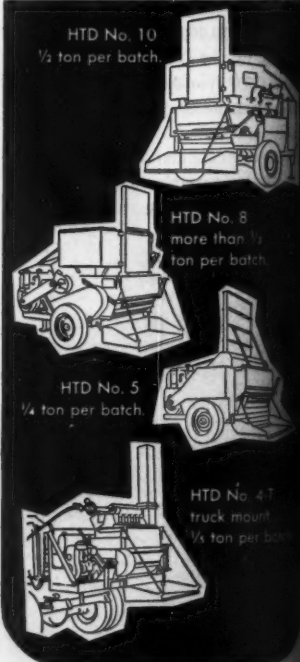
With Blu-Coated Parts Worthington Air Tools operate better job after job and in damp atmosphere. They resist wear, seizing, galling. They hold oil better. Even after your toughest jobs you can store them for months without deterioration.

Blu-Coated and Worthington Distributor's Guaranteed Availability Plan keep your jobs going even if your tools are in for checkup or repair. GAP works this way: 1) bring in your Blue Brute tool for repair. While it's in distributor's hands he will, 2) lend you an air tool to keep your job going. See him for complete details, about Blu-Coated, GAP, and assured parts and replacements. 60-15



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PAVING OR PATCHING
IN ANY SEASON

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For details and specifications write...

McCONNAUGHAY MIXERS, INC.

LAFAYETTE, INDIANA

National distributors: Asphalt Equipment Co.
3314 Cherry Lane, Fort Wayne, Indiana

For more facts, circle No. 384

CONTRACTORS AND ENGINEERS



The Oliver OC-96 with a 1-yard front-end loader and rear-mounted scarifier performs before the press and overseas dealers. The loader first ripped up a strip with the scarifier and then picked up the loosened dirt with the loader.



On the Oliver Model 880 tractor with permanently mounted 1/2-yard backhoe, each rear wheel is driven by a separate engine. The one-wheel reverse action helps on tight turns. The unit is rated at more than 100 horsepower.

Oliver shows new industrial line

A wide selection of crawler-mounted front-end loaders was recently demonstrated at the Oliver World Congress on Hawthorn-Melody Farm near Libertyville, Ill. Designed to meet the specialized needs of the building and material-handling fields, the four sizes of loaders range from 3/4 yard to 2 1/4 cubic yards.

Of particular interest is Oliver's new OC-96 crawler tractor with 1-cubic-yard front-end loader and rear-mounted scarifier. It features Trans-O-Matic steering, said to utilize counterrotating tracks to provide an extremely short turn. The operator can also use the fast "spot turn" where one track remains still and the opposite track stays in motion.

In addition to good maneuverability, the OC-96, with its special long tracks and 15,000-pound over-all weight, has exceptional stability. It easily loads heavy materials such as wet sand and slag aggregates. The tractor is equipped with a torque converter and directional power shift.

As a companion model to the loader, the versatile Model OC-9 crawler was

unveiled. It is also equipped with track counterrotation, directional power shift, and torque converter.

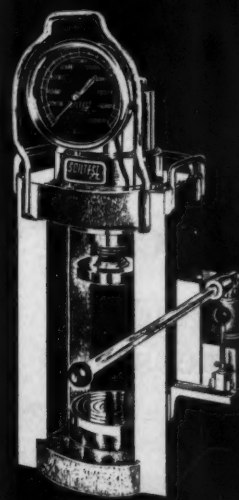
At the demonstration for the overseas distributors, a twin-engine rubber-tire tractor was also introduced. Called the Oliver Twin 880, it can be used to pull such heavy equipment as sheepfoot rollers.

Each rear wheel of the 880 is driven by a separate engine, making it possible to reverse one wheel while the other wheel drives forward. Supplemented by the front-wheel steering, this reverse action aids in making tight turns.

In addition, Oliver displayed three sizes of wheel tractors, ranging from 34 to 65 belt horsepower, with combinations of front-end loaders and rear-mounted backhoes. Onlookers were impressed with the action of the Model 770 with 3/4-yard digging bucket.

For further information write to The Oliver Corp., Dept. C&E, 19300 Euclid Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 116.

SAVE
TIME ON ALL
CONSTRUCTION
BY TESTING
WITH A **NEW**



**CT-711
CONCRETE
TESTER**

**FOR LABORATORY
OR JOB-SITE USE**

MEETS THE ASTM AND
AASHTO SPECIFICATIONS
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For more facts, circle No. 387



...with **SIKA**
QUICKSETS

SIKA No. 2

... for high pressure leakage thru concrete in deep basements, tunnels, shafts and foundations. Mortar will set in 15-30 seconds - forms plug that bonds tightly. Will not wash away.

SIKA No. 4A

... for slow leaks and seepage thru concrete or masonry. Cement mortar sets in 45-60 seconds - bonds tightly to wet leaking masonry. Dilute with water to change speed of set.

other SIKA Quicksets

SIKA NO. 3

For Fast Setting Pointing Mortar

SIKA NO. 4

For Grouting Against Running Water

SIGUNIT

For Fast Setting Air Placed Mortar

Sika **SIKA CHEMICAL CORPORATION**
PASSAIC • NEW JERSEY
COMPOUNDS FOR MASONRY and CONCRETE CONSTRUCTION

DISTRICT OFFICES: ATLANTA • BAYON BOULE • BOSTON • CHICAGO • DALLAS • DETROIT
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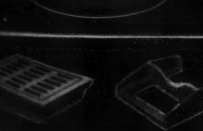
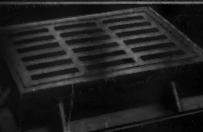
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For more facts, use Request Card at page 18 and circle No. 385

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- ★ SUPERIOR FINISH
- ★ SOLID VALUE
- DELIVERED ON TIME



Patterns on hand for over
15,000 different Gray Iron
and Ductile Iron construction
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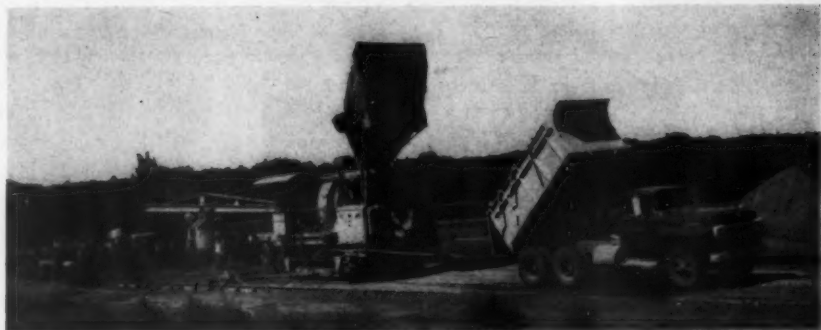
NEENAH
FOUNDRY COMPANY
NEENAH • WISCONSIN

For more facts, circle No. 385

AUGUST, 1959



Plenty of water sources along a 13-mile paving job near Valley City, N. Dak., makes it possible to supply the paver through a 2½-inch line that runs along the median strip. A hose from the paver is hooked into tees located every 300 feet along the line. A Rex 3-inch high-pressure pump and a Jaeger 3-inch high-pressure pump, both driven by gasoline engines, work on the bank of the creek.



The paver works between the forms, pulling a Cleveland Trailgrader to trim any irregularities. A B-K spreader with pan-type vibrators strikes off the mix.

Spread saves on the use of three water trucks on interstate concrete paving job by having

Mixing water pumped right to paver

Good equipment and experienced men are the most important things needed to keep a paving train moving down a road, according to Jim Strain, superintendent for a contractor on a 13-mile stretch of North Dakota Interstate. The little extras that helped the job along were a unique water supply system and the construction of two railroad sidings that ran a total of 4,000 feet and made for an efficient batch-plant setup.

On the new Interstate System in North Dakota, concrete is being used for the main traffic lanes, asphalt for shoulders and service roads. In the

*To tie re-bars...
use*

CF&I Cal-Tie Wire
in handy
dispenser



The Image of CF&I offers tie-wire in a belt-borne dispenser for safe, quick tying of re-bars. Cal-Tie Wire in the compact reel eliminates the hazards of working with bulky shoulder coils. It



prevents eye and facial injuries due to loose coil ends... leaves workers' hands free... keeps wire from kinking or snagging... gets the job done fast... cuts wire waste.

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For more facts, use Request Card at page 18 and circle No. 388

With Either Push Loading or Top Loading
KOLMAN turns out production!



This dozer-charged KOLMAN Model 101 is scalping out boulders from material being fed into crusher. The KOLMAN Plant is also very effectively used for rejecting fines ahead of a crusher.

The KOLMAN Model 101 Conveyor-Screen Plant is available with a wide choice of feeding accessories which facilitate charging with most any type of equipment. The Dozer Trap and Feeder-Trap are ideal accessories for push loading operations with a bulldozer. The Casting Hopper and Feeder-Hopper are designed especially for top loading with various charging units, from front end loaders and trucks to shovels and draglines.

Complete flexibility is now also available with the Conversion Hopper for Dozer Traps and Feeder-Traps, making both top loading and push loading practical with the same plant.

Further adaptability to any job requirement is achieved through a choice of single, double, or triple deck Screens on the Model 101. Thus an unusually low equipment investment makes possible simultaneous loading and screening while scalping oversize or rejecting fines with a single deck, both scalping and rejecting at



This Model 101 with Feeder-Trap, Wing Hopper and Single Deck Screen is equipped with Conversion Hopper for top loading with dragline. Hopper is easily removed from Trap for fast speed dozer charging.

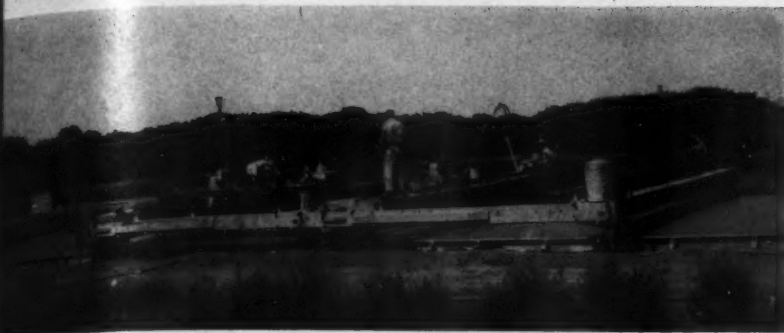
once with a double deck or grading and classifying with the triple deck Vibrating Screens.

Yes, KOLMAN has the answer for low cost high production screening and loading. Complete selection of sizes from 18" to 48" belt widths, lengths up to 60', and screens to 12' on Conveyor-Screen Plants. Portable Conveyors also available up to 80' lengths and loaders up to 60" belt widths. Write for literature and prices.

KOLMAN Manufacturing Co.
4922 West 12th St. Sioux Falls, S.D.

For more facts, use Request Card at page 18 and circle No. 389

CONTRACTORS AND ENGINEERS



Two Koehring longitudinal floats, tied together, work as one unit to finish the concrete.



A Concut 4-arbor span saw makes fast work of sawing transverse joints. The sawing is done within 24 hours after paving.



An American 375 crane with Johnson 3/4-yard clam and a Manitowoc 2000 with 1 3/4-yard Johnson clam feed the 3-compartment bins of the Johnson plant. A Ford truck is picking up batches.

ast, asphalt has been used extensively for surfacing of state highways, with the exception of heavily traveled routes in the Red River Valley.

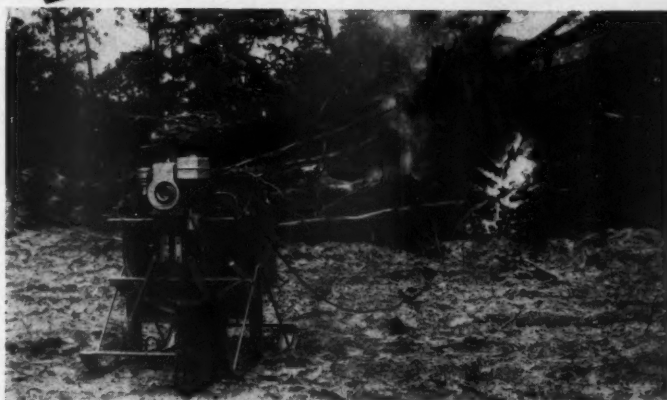
Working under a \$2 million contract, Woodrich Construction Co., Hopkins, Minn., paved the section between Jamestown and Valley City, a part of Interstate Route 94 between Bismarck and Fargo. On the stretch, which parallels U. S. 10, a 2-

lane blacktop highway, Woodrich was also responsible for laying the 3-inch sand subbase. Shoulder construction and paving were done under a separate contract by another firm. While Woodrich was at work, two other contractors, working on adjoining contracts, were paving an additional 26 miles of the 4-lane divided highway.

(Continued on next page)

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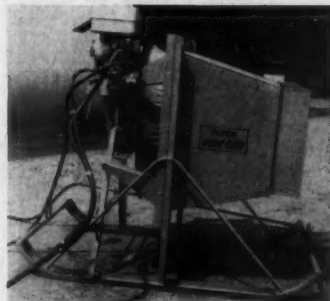
with new
Fleco Fire Fan!

Now you can economically dispose of brush piles, stacks and windrows! Fleco Fire Fan forces clean, complete burning even though brush is wet! A 24-inch fan, powered by a Briggs and Stratton engine, directs air onto the fire at a 32 MPH velocity—forcing fast burning. A self-priming pump feeds a carefully controlled supply of fuel oil onto the fire with complete safety and efficiency to insure even cleaner burning at lowest cost!

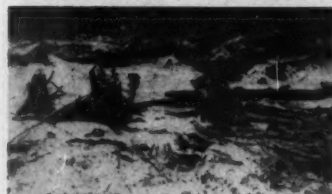
Piles burn cleaner, faster, safer and at greatly reduced cost with Fleco Fire Fans.

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Skid-mounted for easy moving, the Fleco Fire Fan has adjustable vents to direct flow of air. A 20-foot hose with pressure nozzle permits safe application of fuel oil on burning piles.



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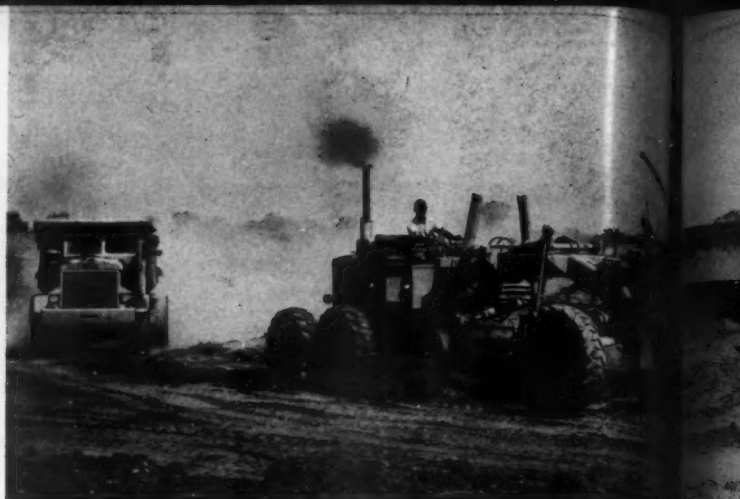
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BARCO MANUFACTURING CO.
2141 North Street
Barrington, Illinois

For more facts, use Request Card at page 18 and circle No. 390

AUGUST, 1959



Drilling for a 65-foot-deep rock cut on a section of East-West Interstate 80 near Mount Hope, N. J., is done by Gardner-Denver Air Tracs with 2 3/4 and 3-inch carbide insert bits. The work in the 300-foot-wide cut is being handled under subcontract.



Haul-road maintenance for part of the Cincinnati-Conneaut Ohio Freeway project is the main job for this Huber-Warco 4D-115 motor grader, shown working ahead of a Euclid end-dump. The grader also handles ditching and bank clearing and will do a large portion of cutting the finish grade on this 6-mile road.

AMAZING NEW TRENCHING TOOL!



DITCH WITCH

9.2 HP M-3 3 SPEEDS

★ TRENCHES 1200-2400 FT. PER 8-HOUR DAY!
★ ABOUT 2¢ A FOOT IS USUAL TRENCH COST! ★

★ CAN PAY OUT IN 4 WEEKS, EASILY EARNS \$120 A DAY! ★

★ DIGS ANY SOIL THAT CAN BE DUG BY ANY MACHINE! ★

FEATURES: Sealed planetary geared reduction unit eliminates excess belts, sheaves, chains and sprockets. Telescoping boom and sectional chain easily adapt unit for maximum performance on any job.

Trenches 3-8" wide, up to 4' deep, digs road crossings, gas, water, electric and telephone service lines, undercuts sidewalks, and trenches for ground wires, street lighting, traffic signals, sprinkler systems, footings, etc.

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Gentlemen: Please send the information checked, at no obligation.
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For more facts, use coupon or circle No. 392

(Continued from preceding page)

As on most interstate paving jobs, numerous grade separations broke up stretches of pavement, making it difficult to set production records. But with two pavers feeding the train, Woodrich was able to make 2,600 feet on a good day. On the best day, crews rolled out 3,152 feet of 10-inch pavement.

Water piped to paver

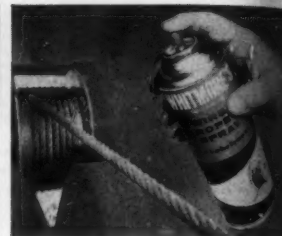
An unusual method of feeding water to the paver helped make the operation more efficient. The water was pumped from a creek through a 2 1/2-inch line along the median strip to a hose connected to the paver. Because of many sources of water in the area, it was seldom necessary to lay more than a mile or two of pipe. If necessary, however, the pipeline could have been extended to five miles. The hose connection to the paver was made from tees at 300-foot intervals along the line. At the creek, two 3-inch high-pressure pumps—a Jaeger and a Rex

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HANDI-LUBE LIQUID GEAR COMPOSITION

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Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 30%—special protective qualities absolutely eliminate corrosion—non-gumming qualities induce "carry-back"—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

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Superkut® CHISELS break 50% more concrete per man hour than any other tool....



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"Power-matched for use with modern hammers, Superkut® Chisels break 50% more concrete per man hour than any other tool." The amazing performance record reported by users of the original Superkut® Chisel made by Vulcan.

The unique wedging action of Superkut® Chisels actually breaks concrete, rock, asphalt, brick or cobblestone pavement faster and easier — and stays sharper 8 to 10 times longer.

To avoid confusion, always ask for **Vulcan Superkut®** Chisels. When you specify **Vulcan Superkut®**, you buy the original — a "carbon copy".

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Specialists in the Design and Production of Pneumatic Tool Accessories

For more facts, use Request Card at page 18 and circle No. 394

CONTRACTORS AND ENGINEERS



Grade preparation for a section of the Jacksonville Expressway north of Jacksonville, Fla., is handled by two Seaman-Andwall Pulvi-Mixers working in tandem; the lead one is pulled by a D6, the second by a D8. Duval Engineering & Contracting Co., Jacksonville, is doing the work on this section of the new expressway.

Concrete goes into place fast for the new Los Angeles Sports Arena, which will be ready by 1960. Concrete, delivered by 7-yard Whiteman mixers, is loaded to Whiteman power buggies for placing on upper levels and ramps. Some 18,000 yards of concrete is going into the structure.

...supplied up to 400 psi pressure to the line.

By using the pipe system, the contractor eliminated the need for at least three water trucks. With the trucks out of the way, there was more room around the paver for batch trucks and other equipment to operate.

The paving train normally operated with two Koehring 34-E pavers. One of these worked between the forms while the other moved along the outside shoulder. To level off any irregularities in the base, the paver inside the forms pulled a Cleveland Trail-grader.

The Blaw-Knox spreader, equipped with pan-type vibrators, was followed by a Jaeger transverse finisher. Then a Flex-Plane rig set the 1/8-inch asphalt-impregnated joints at 80-foot intervals. Following this machine were two—and sometimes one—Koehring longitudinal finisher, a bridge for adjusting the inserted joints, a bridge pulling a burlap drag, and a Flex-Plane curing machine.



Service-Master

TWO MODELS . . . FOUR SIZES
for 1/2, 3/4, 1 and 1 1/2 ton chassis

Service-Master costs so much less in the long run that it's actually false economy to settle for any other make. Loaded with no-cost extras and put together to stay together. Compare . . . you'll see why Service-Master is your very best buy.



Model SM-15 is shown at top; with optional Canopy Top below.

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FORGED HIGH ALLOY STEEL!

RIPPER SHANK & POINT
with **REPLACEABLE WEAR-PLATES**
RIP ROCK or other
hard compact material

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SPECIALIZING IN TWO-PART TEETH FOR OVER 25 YEARS

For more facts, use Request Card at page 18 and circle No. 396



Excavation and grading of a site for the Riverdale Homes housing development near Middlesex, N. J., is being handled by SallCon, Inc., Sommerville, N. J., with a pair of Michigan Model 110 scrapers. The 10½-yard-capacity machines are working in Brunswick shale and red shale.



A 120x209-foot concrete mat, 5 feet thick, will serve as the base for the generator and boiler of a \$24 million steam power plant in Bow, N. H. Plastiment retarder-densifier was used in the mix to keep the 10,000-lb monolithic slab free from shrinkage cracks.

MOVE MATERIALS THRU BINS HOPPERS CHUTES

With "maintenance-free" Navco One-Piece Vibrators*

Navco Air Vibrators have a patented one-piece design for trouble-free operation. No need to stock spare parts—no assembly bolts, housing springs, separate striking plates, or grooved pistons in Navco Vibrators. Complete line for bins, hoppers, chutes, R. R. Cars, concrete forms, and batching. Now being specified by the country's leading automotive production foundries.

POUNDING IS EXPENSIVE
wastes time, damages equipment

FREE! 4-page Catalog
Detailed information on models and applications
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- Accurate
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The VDO Tachograph is a precision speedometer that records in easy-to-read chart form the speed and mileage of a vehicle at any time. Accurate at all speeds, the Tachograph provides information to promote safety, cut maintenance costs and eliminate wasted time and unscheduled stops. Warns when a pre-adjusted speed is reached. Available in both M.P.H. and R.P.M. Models.

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Registers Mileage Accurately!
for • Interchange of Equipment • Leasing or Rentals • Warranty Programs • Tire Mileage

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Electrically registers hours and minutes of engine operation. For use on material handling equipment, tractors, road graders, trucks, pumps, etc.

National Sales and Service

Engler Instrument Co.
Dept. CE-3
250 Culver Avenue, Jersey City, N. J. Phone HEnderson 4-6500

For more facts, circle No. 398

(Continued from preceding page)

spraying Permte curing compound.

Within 24 hours after the pavement had been laid, a Concut 4-arbor span saw cut the transverse joints. A tandem rig, consisting of a Concut and a Clipper saw, cut the center joint. The first saw cut half the depth of the joint, and the saw in the rear finished the cut. Serviced joint filler was then applied to the joints to seal them from moisture.

Since North Dakota is shy on concrete aggregates, all of the material for the batch plant was shipped a considerable distance to the job by the Northern Pacific railroad. Nearly half of the aggregate traveled about 145 miles by rail from a source in western Minnesota. The remainder was shipped in by rail from a pit about 80 miles away in Sheyenne, N. Dak. Throughout the job, there were no delays or shutdowns because of a shortage of materials.

Modern aggregate and cement batchers with automatic controls kept the materials flowing to the paver without interruption. Trucks made two stops going through the plant.

The Johnson 3-compartment bins of the aggregate batcher were fed by



The Blaw-Knox twin cement batcher, with 400-barrel overhead bin, delivers two batches to one of the Ford trucks. Cement comes in by rail and is fed by undertrack screw conveyor to the bucket elevator.



for better performance



MAXI SPEED AND MANEUVERABILITY
Easy handling, rubber-mounted cranes move faster between lift points — protect yard and road surfaces — safely come up close for heavy lifts.

MAXI STABILITY
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Send for catalog giving complete information and showing Harbormasters in action . . . or if you have a problem our marine architect will make recommendations without obligation.

MURRAY & TREGURTHA, Inc.
44 Hancock St., Quincy 71, Massachusetts

For more facts, circle No. 400

CONTRACTORS AND ENGINEERS



Some 20,000 linear feet of pile shells is going into the foundation of the largest Southern store of Sears, Roebuck & Co. in Jacksonville, Fla. The groups of Armco Hot-Cor pile shells are filled and capped with concrete. The foundation contractor averaged 44 piles per 8-hour day.



Shot rock, hauled by International Model 65 Payhaulers to a crusher near Harrisonburg, Va., will be used as aggregate on a 7-mile stretch of Interstate 81. An estimated 750,000 tons of the crushed rock will be used in the base and surface of the road, which will serve as a bypass around Harrisonburg for U. S. 11.

two cranes—an American 375 and a Manitowoc 2000. Two Barber-Greene 36-inch conveyors carried the material from the railroad cars to the stockpiles.

Rated at 75 tph, the Blaw-Knox twin cement batcher was equipped with a 400-barrel overhead bin. Cement cars, containing Huron, Universal Atlas, or Northwestern States air-centraining cement, rolled in on a siding to feed the plant.

Personnel

For the North Dakota State Highway Department, A. L. Haykel was resident engineer for the entire 39-mile stretch of paving. C. E. Rice was the resident engineer on Woodrich's contract. For the contractor, Jim Strain was superintendent. Jim Gothman was paving foreman and Carlyle Peterson, grade foreman. THE END

Landslides analyzed in HRB bulletin

Highway Research Board Bulletin 214, "Landslide Occurrence and Analysis," is available for 80 cents. Three papers are presented in the bulletin.

The regional concept of landslide occurrence covers the initial phases of a basic study of landslides under the long-range objective of developing or refining quantitative methods of analyzing the degree of stability of natural slopes. An appraisal of measures for improvement of slope stability presents several graphs enabling the engineer to estimate the amount of drainage required to achieve a desired factor of safety of an earth slope, and safety factor improvement by benching or reducing the slopes of excavations.

The last paper describes a method developed by the Washington State Department of Highways to investigate a given range of slopes, automatically advancing to the next flatter slope if the safety factor is found to be less than the predetermined value, and to investigate a range of slopes in individual analyses for each slope. Formulas, diagrams, and graphs abound.

The bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

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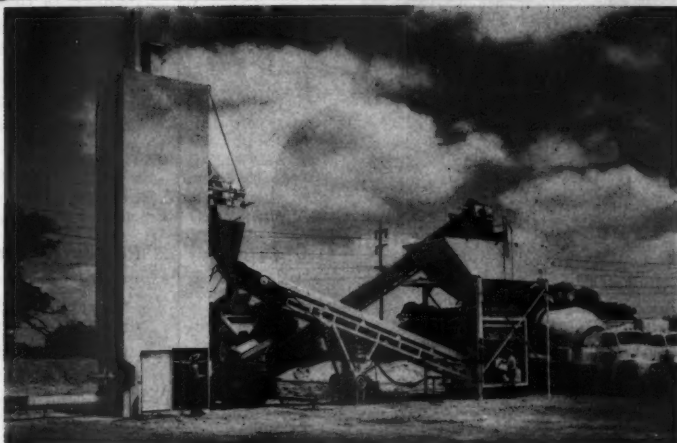
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HIGH PRODUCTION . . . LOWER COST

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For high production at lower cost, the Ross 30-ton, 3-compartment Overhead Bin is the answer. The pictured unit, in operation with the proper allied equipment, will accommodate the 4-yard or 6-yard Ross Porta-Plant beneath with ease.

PORTABILITY IS NO SIDE LINE WITH US.

ROSS PORTA-PLANT

BOX 446

PHONE MI 5-2697

BROWNWOOD, TEXAS

For more facts, use Request Card at page 18 and circle No. 401

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Easily assembled floating **UNIFLOTE** sections provide transport across water for heavy equipment — **UP TO 100 TONS! !**



Using 8 Uniflotes plus 4 ramp, 2 bow and 2 stern units this ferry was quickly assembled using unskilled labor. Ferry and 30-ton equipment load took draught of only 3" and was propelled by a 150-hp. outboard motor. Sections are tilted to couple at bottom, then pinned through eye holes at top. Other uses: floating platforms for derricks, cranes, draglines and pile drivers, landing stages, wharves, piers, etc.

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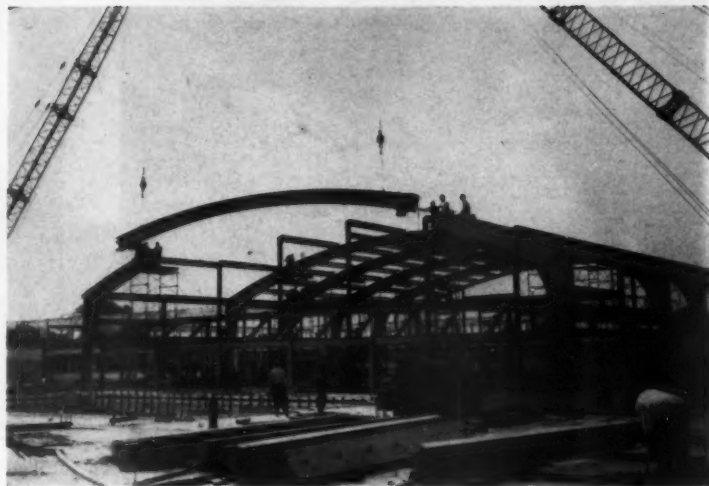
Toronto 17, Canada

REPRESENTATIVES

Timberland Machines Inc., 169 Front St., South Portland, Maine. Mason and Bacon Inc., McLure Building, Frankfort, Kentucky. Bailey Bridge Equipment Co., 1767 Conejo Avenue, San Luis Obispo, California.

For more facts, use Request Card at page 18 and circle No. 402

A 6-TON, 62-FOOT-LONG rigid-frame arch section is guided into place by erection crews of Bethlehem Steel Co., Bethlehem, Pa., for the \$3,600,000 Cheektowaga, N. Y., junior-senior high school. A series of seven of the rigid frames, which will be left exposed after the school is completed, will support the roof over the gymnasium and swimming pool. Span of the frames is 101 feet center-to-center of columns. In all, 765 tons of steel is being used in the framework of the school.



**Pumps water
anywhere 2 men can carry it**

This New
HALE

**30-T pumps 20,000 G. P. H.
at free flow discharge
with ample reserve.**

Two men carry this new Hale pump anywhere you want to move water—fast! Use it for speedy bailing of excavations, elevator shafts, cellar holes, manholes, ditches, etc.

Look at these examples of its speed.

	Approx. Bailing Time
3 ft. of water in a 50' x 20' cellar hole	1 hr.
8 ft. of water in a 6' x 9' elevator shaft	9 min.
1 ft. of water in the same shaft	1 min.
18 in. of water in a 10' x 30' excavation	10 min.

The dependable 30-T features an externally adjusted impeller with "clogless" type operation; a simplified self-priming system that eliminates fussy valves and gadgets; simple "O" ring seals, instead of gaskets. Powered by a 9-h.p. Briggs and Stratton 4-cycle engine.

Also available in HALE'S popular, protective, wrap-around frame; or mounted on wheels. Write to Hale for literature.

Want a pump that can be carried by one man?

... Ask about the Hale 20-T with 7,000-G.P.H. capacity.

HALE FIRE PUMP COMPANY
CONSHOHOCKEN, PA.

A leading name in Fire Pumps for more than 40 years
For more facts, circle No. 403

Yale & Towne names new manager

John J. Chalmers has been named manager of the New York City sales and service branch of Yale Materials Handling Division, Yale & Towne Mfg. Co., Philadelphia. For the past four years, Chalmers has been president of Schenectady Material Handling Co., a Yale franchised sales and service representative in Schenectady, N. Y.

Parker-Hannifin news

Richard A. Beckert has been named district manager of distributor sales in the Cincinnati area by Parker-Hannifin Corp., Cleveland. From Cincinnati headquarters, he will cover southern Ohio, Kentucky, and Indiana.

Centriline elects officer

N. Young DuHamel, Jr., has been elected vice president of sales and advertising for Centriline Corp., a wholly owned subsidiary of Raymond International Inc., New York City. Centriline specializes in cleaning and lining underground pipelines.

Western-Knapp names

Robert M. Hansen has been named business development engineer for the Western-Knapp Engineering Co., San Francisco. Hansen, who will locate in Salt Lake City, had been district representative for the Northwest territory for the Wemco and Industrial Sales Divisions of Western Machinery Co.

SALES MANAGER

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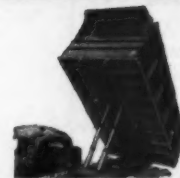


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CONTRACTORS AND ENGINEERS

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Crawler tractor—a 24-page catalog on the Euclid Model TC-12 twin-engine crawler tractor. Well illustrated with photographs from various types of operations, cutaway and sectional views, and drawings that explain engine-power application, Torqmatic drive, hydraulic track tensioning, and other design features. Also contains condensed specifications and a performance chart in addition to data on optional attachments. Form No. 606. Write to the Euclid Division, General Motors Corp., Dept. C&E, 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 34.

Elliptical concrete pipe—a brochure on elliptical concrete pipe for sewers and culverts. Contains descriptions of the use of elliptical pipe to obtain round-pipe flow equivalents in areas where either shallow or narrow trench makes use of full round pipe impractical. Illustrated with diagrams, data charts, and tables that compare discharge flow rates for the full range of pipe sizes.

Write to the United States Concrete Pipe Co., Dept. C&E, 1500 Union Commerce Bldg., Cleveland 14, Ohio, or use the Request Card at page 18. Circle No. 16.

Calcium chloride—a 64-page manual entitled "Calcium Chloride in Concrete." Includes nearly 20 charts and 40 illustrations which refer to the various advantages of calcium-chloride concrete construction. Offers data on: major effects, technical data, industry use, how to use, specifications, and special conditions. Manual C&E-1.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 20.

Motor scraper—a booklet describing the construction features and operating advantages of the Allis-Chalmers Model TS-260 motor scraper powered by the firm's 16000 diesel engine developing 230 horsepower. Also includes information on the A-C 20-ton TR-260 rear-dump wagon, plus specifications of both the wagon and the motor scraper. Well illustrated with drawings and photographs. Booklet MS-1312.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 105.

Chain saws—literature describing the features of Eclipse Wasp Models 700, 800, and 1100 direct-drive, one-man-operated chain saws. Illustrated, with general specifications given.

Write to The Eclipse Lawn Mower Co., division of Buffalo-Eclipse Corp., Dept. C&E, 1234 Railroad St., Prophetstown, Ill., or use the Request Card that is bound in at page 18. Circle No. 86.

Vibrating screens—a 16-page booklet describing the Pioneer line of heavy-duty Mesabi screens. Stresses several recent improvements, including the addition of a secondary spring type of screen suspension that, it is said, eliminates transfer of vibration to the supporting structure, increases screen efficiency, and reduces strain on screen assemblies. Illustrations show the new suspension on both portable plant-mounted screens and stationary installation screens. Form 651A.

Write to Pioneer Engineering, Division of Poor & Co., Inc., Dept. C&E, 3200 Como Ave., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 110.

Batching plant—a bulletin on the new Blaw-Knox electrically controlled high-speed portable batching plant for highway and airport paving. Describes and illustrates operating features of the plant's dual automatic cement batcher with 2-pen recorder, 600-barrel cement bin, automatic aggregate batcher with 4-pen recorder, and 4-compartment aggregate bin. Illustrations show rapid-erection procedure. Bulletin No. 2640.

Write to the Blaw-Knox Co., Dept. C&E, 300 Sixth Ave., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 43.

Tractor shovels—specification literature on the following Trojan tractor shovels: Model 104, 9,000-pound lifting capacity; Model 124, 10,000-pound lifting capacity; Model 154, 12,000-pound lifting capacity. Lists standard and optional equipment for each model.

Write to The Yale & Towne Mfg. Co., Trojan Division, Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 51.

Motors, drives—a bulletin describing the complete Louis Allis line of ac and dc standard motors, special motors, gear motors, and adjustable speed drives. Summarizes the characteristics and modifications for 20 basic types of motors and drives ranging from ¾ to 2,000 horsepower. Bulletin No. 2650.

Write to The Louis Allis Co., Dept. C&E, 427 E. Stewart St., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 115.

Welding equipment, techniques—a comprehensive 120-page spiral-bound book on the techniques of welding aluminum using Air Reduction's Aircomatic (gas-shielded metal-arc) and Heliweld (tungsten-inert-gas) processes. Illustrated with 100 photographs, charts, and detailed diagrams. Form ADI 1258.

Write to Air Reduction Sales Co., a division of Air Reduction Co., Inc., Dept. C&E, 150 E. 42nd St., New York 17, N. Y., or use the Request Card at page 18. Circle No. 17.

(Continued on next page)



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Product Literature

Void forms—a bulletin describing Elgood re-usable, inflatable void forms for a variety of applications. All diameters from 1/4 inch to 120 inches. Job photos illustrate text. Catalog No. 500.

Write to the Elgood Concrete Forms Corp., Dept. C&E, 378 Ten Eyck St., Brooklyn, N. Y., or use the Request Card at page 18. Circle No. 157.

Diesel engine—a folder on the I-H Model UDT-817 diesel engine said to develop 385 horsepower at 2,100 rpm. Illustrated with sectional and cutaway photographs, and also with fuel-consumption graphs and performance curves. Power unit combinations also detailed. Folder CR-684-1.

Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 144.

Dipper-tooth guide—a catalog listing over 400 Simplex tooth-point and tooth-adaptor models to suit every make of shovel, dipper, and backhoe. Well illustrated with photographs and drawings.

Write to the American Brake Shoe Co., American Manganese Steel Division, Dept. A, Dept. C&E, 389 E. 14th St., Chicago Heights, Ill., or use the Request Card at page 18. Circle No. 145.

Asphalt kettles—literature on Aerol bottom-fired asphalt kettles. Gives complete specifications for six models with capacities of 80, 115, 165, 230, 330, and 500 gallons. Data on new design features and optional equipment. Bulletin No. KE-B-6A.

Write to the Aerol Products Co., Inc., Dept. C&E, 69 Wesley St., South Hackensack, N. J., or use the Request Card that is bound in at page 18. Circle No. 27.

Pumps—a folder discussing several models of Nagle pumps for a variety of applications. Supplies brief description and application data for each. Photographs illustrate text. According to the literature, various types of impellers are available, depending upon the nature of the material to be pumped. Bulletin No. 158.

Write to Nagle Pumps, Inc., Dept. C&E, 1249 Center Ave., Chicago Heights, Ill., or use the Request Card at page 18. Circle No. 151.

Crawler-loader—a fact sheet on the MCL Series air-powered front-end loader and dozer. Contains action photos, dimensional drawing, and brief specifications for Models 13 AS, 13 A, 17 A, and 27 A.

Write to Machinery Center, Inc., Dept. C&E, 1201 S. Sixth West St., Salt Lake City 10, Utah, or use the Request Card at page 18. Circle No. 146.

Concrete-forming equipment—a booklet on Waco self-aligning concrete-forming equipment. Shows fast, easy erection with two-piece hardware. Text illustrated with drawings and photographs. Form No. WCF-259.

Write to the Waco Mfg. Co. of Illinois, Dept. C&E, 9557 Irving Park Road, Schiller Park, Ill., or use the Request Card at page 18. Circle No. 148.

Maintaining unpaved roads—a pocket-size 36-page well illustrated booklet entitled "Maintenance Tips for Unpaved Roads." Tells how to maintain unpaved roads in all seasons. Includes charts and tables, and one chapter is devoted to the use of calcium chloride in maintenance.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Rd., Washington 6, D. C., or use the Request Card at page 18. Circle No. 149.

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Photocopier—a booklet describing two new models of Remington Rand's Transcopy photocopier line—the 9 1/2-inch-wide Transcopy Star and the 15-inch-wide Transcopy Mercury. According to the literature, the machines are designed for point-of-use operation, even under bright lighting. Folder P544.

Write to the Remington Rand Division, Sperry Rand Corp., Dept. C&E, 315 Fourth Ave., New York 10, N. Y., or use the Request Card at page 18. Circle No. 147.

Correcting structural settlements—literature on the Presscrete method of correcting and preventing structural settlements. Discusses pressure grouting, soil stabilization, and mudjacking. Text illustrated with on-the-job photographs.

Write to The Presscrete Co., Inc., Dept. C&E, 420 Lexington Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 96.

To obtain the literature
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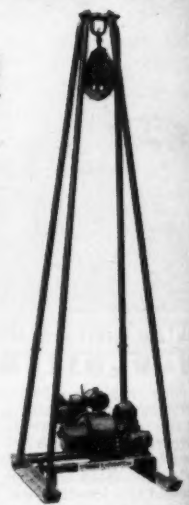
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For more facts, use Request Card at page 18 and circle No. 410

CONTRACTORS AND ENGINEERS

Truck crane; crane carriers—a bulletin on the Schield Bantam Model T-350 11-ton carrier-mounted crane excavator. Also describes and illustrates the complete line of Bantam-built crane carriers available for mounting, as well as the complete line of available front-end attachments. Generously illustrated with photographs. Bulletin T-350.

Write to the Schield Bantam Co., Dept. C&E, 219 Park St., Waverly, Iowa, or use the Request Card at page 18. Circle No. 99.

Power-transmission machinery—a brief but comprehensive review of the Dodge line of power-transmission machinery. Features Flexidyne dry fluid drives and Para-flex flexible cushion couplings, as well as illustrated descriptions of such Taper-Lock products as steel conveyor pulleys, roller chain drives, various types of shaft couplings, and the Dyna-V

line of V-belt drives. Bulletin A-706.

Write to the Dodge Mfg. Corp., Dept. C&E, 1944 S. William St., Mishawaka, Ind., or use the Request Card at page 18. Circle No. 21.

Wire rope—an illustrated booklet on how to curb losses due to fatigue of wire rope. Explains the importance of the proportion between the diameter of wire rope and the diameter of sheaves and drums on which it runs, and gives a useful formula described as the D/d ratio to provide a quick answer to the problem. Also includes a handy table showing the relative bending life of all the major wire-rope constructions, and suggestions concerning reverse bends and fatigue damage caused by end attachments. Bulletin No. 105.

Write to the Leschen Wire Rope Division, H. K. Porter Co., Inc., Dept. C&E, 2727 Hamilton Ave., St. Louis 12, Mo., or use the Request Card at page 18. Circle No. 112.

Versatile welder—an illustrated bulletin describing the construction and operating characteristics of the Idealarc TIG welding machine for all manual arc-welding applications—ac inert gas, dc inert gas, ac manual electrode, and dc manual electrode. Specifications included. Bulletin No. 4608.1.

Write to The Lincoln Electric Co., Dept. C&E, 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 111.

Concrete, mortar check list—a comprehensive check list of factors to be considered when specifying concrete and mortar. Includes such considerations as job requirements and conditions, concrete floors, concrete in plastic and hardened state, curing, surface aftertreatments. Also covers masonry mortar, grouting materials, and mortar for miscellaneous uses. Bulletin X-6.

Write to The Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 101.

Loader, backhoe, tractor units—a booklet telling how International Wagner loaders and backhoes are matched with the firm's Model 240, 340, 460, and 560 utility tractors to fit exact job needs. Well illustrated with charts, drawings, and photographs. Catalog CR-1076-I.

Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 102.

Concrete-quality control—a folder showing how the slump test, air-entrainment determination, and testing of concrete cylinders are performed. Illustrates equipment needed to perform the specific tests, as well as other testing equipment pertinent to the concrete-quality-control field.

Write to Soltest, Inc., Dept. C&E, 4711 W. North Ave., Chicago 39, Ill., or use the Request Card at page 18. Circle No. 150.

Crawler-mounted excavator—a catalog describing the Koehring crawler-mounted Model 205. Photos show the machine working as a ½-yard shovel and hoe, a crane handling a concrete bucket, a ¾-yard dragline, and ¾-yard clamshell.

Write to the Koehring Division, Koehring Co., Dept. C&E, 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 70.

Truck diesels—literature describing German-imported Kamper water-cooled automotive diesel engines for trucks. Covers Models 492-H, 692-H, and 8V105, for gvw capacities up to 45 tons. Light weight and interchangeability are other features stressed.

Write to the Trans American Trading Corp., Dept. C&E, 23 No. 55, Vedado, Havana, Cuba, or use the Request Card at page 18. Circle No. 69.

Products and facilities—a 52-page booklet illustrating and describing McKiernan-Terry's products and their applications, as well as the production facilities of the company. Construction features of many well known products of this firm are explained.

Write to the McKiernan-Terry Corp., Dept. C&E, 100 Richards Ave., Dover, N. J., or use the Request Card at page 18. Circle No. 54.

Power spreader—a folder describing the Flaherty self-propelled power spreader. Stresses such features as the unit's adjustable screen, hand-controlled belt conveyor, and quickly removable belt hopper. Illustrated with on-the-job photographs, sketches. Specifications included.

Write to Flaherty Mfg., Inc., Dept. C&E, P. O. Box 1387, Pocatello, Idaho, or use the Request Card at page 18. Circle No. 66.

Dump-body safety block—literature describing the Shur-Lock Model 20 dump-body safety block designed to prevent a raised dump body from accidentally lowering. According to the company, the device cannot slip or be knocked out until it is unlatched by the operator.

Write to the Gallon Products Co., Dept. C&E, P. O. Box 155, Gallon, Ohio, or use the Request Card at page 18. Circle No. 9.

Versatile tracks—a booklet describing the ability of Athey Forged-Traks to operate where rubber-tire equipment cannot travel. Diagrams and pictures show various types of Trak-mounted equipment, and specifications are given for all models.

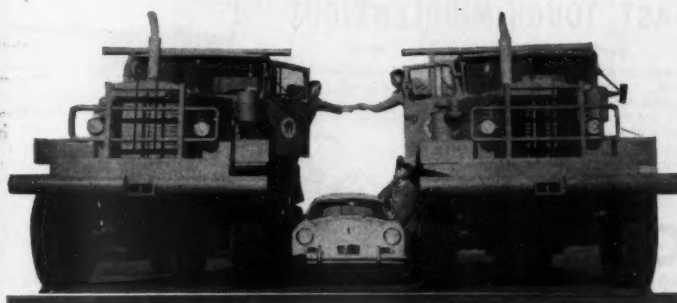
Write to Athey Products Corp., Dept. C&E, 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 7.

(Continued on next page)

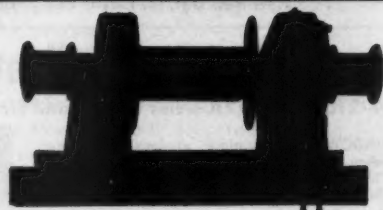
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AUGUST, 1959

Product Literature

Tandem-axle semitrailer—a fact sheet on Trailco steel and all-aluminum dump tandem-axle semitrailers. Gives general specifications and data on optional equipment. Illustrated with photographs.

Write to the Trailco Mfg. & Sales Co., Dept. C&E, Hummels Wharf, Pa., or use the Request Card at page 18. Circle No. 4.

Conveyor-loader—a folder on the Koehring Pitloader, a conveyor-loader available with 36, 42, or 60-inch conveyor belts, for use in loading trucks with gravel, rock, sand, and dirt. Illustrates and describes the double drive, feeder clutch, heavy-duty differential drive, feeder plate, antibuild-up rolls, and tells how the

Pitloader is towed by truck-tractor. Folder No. KC-623.

Write to the Koehring Co. of California, Dept. C&E, 2200 Country Club Blvd., Stockton 4, Calif., or use the Request Card at page 18. Circle No. 95.

Blast-hole drilling tools—literature describing the Brunner & Lay line of rope-thread blast-hole drilling tools—rope-thread Rok-Bits, rope-thread Carbo-Rok extension steel, couplings, and striking bars. Size and type specifications given.

Write to Brunner & Lay, Inc., Dept. C&E, 9300 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 76.

Steel foundation piles—a comprehensive 24-page catalog covering Monotube fluted steel foundation piles. Includes typical installation photos, test driving data, and other technical information. Catalog No. 91.

Write to The Union Metal Mfg. Co., Dept. C&E, 1400 Maple Ave., Canton 5, Ohio, or use the Request Card at page 18. Circle No. 79.

Motor graders—a booklet describing the main features of three Caterpillar motor graders: the 150-hp No. 14; the 115-hp No. 12; and the 75-hp No. 112. Photographs illustrate text. Form No. DE914.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 83.

Paving handbook—a 120-page pocket-size paving handbook. Useful information, brief specifications, tabular data. Generously illustrated with photographs.

Write to the American Bitumuls & Asphalt Co., Dept. C&E, 320 Market St., San Francisco 20, Calif., or use the Request Card at page 18. Circle No. 82.

Crawler tractor—literature on the Allis-Chalmers Model HD-6 diesel-powered crawler tractor. Illustrated with photographs, charts, and graphs. Accessory data, specifications included. Booklet MS-1251.

Write to the Allis-Chalmers Mfg. Co., Construction Machinery Division, Dept. C&E, P. O. Box 512, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 108.

Semiautomatic welder—a folder illustrating and describing the Amsco portable semiautomatic welder for build-up and hardfacing. Stresses simple arc-length control and fingertip feed of welding wire through electrode holder.

Write to the American Manganese Steel Division, American Brake Shoe Co., Dept. A, Dept. C&E, 389 E. 14th St., Chicago Heights, Ill., or use the Request Card at page 18. Circle No. 84.

Material-handling, other equipment—a 68-page catalog of Syntrol material-handling equipment, parts-handling equipment, power rectification equipment, and portable power tools. Contains illustrated descriptions and specifications. Also gives latest listing of Syntrol representatives. Catalog 596.

Write to the Syntrol Co., Dept. C&E, 227 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 152.

Welding manual; alloy catalog—a combination welding instruction manual and catalog of All-State alloys and fluxes. A handy, pocket-size 54-page booklet. Form No. 3159.

Write to All-State Welding Alloys Co., Inc., Dept. C&E, 249-55 Ferris Ave., White Plains, N. Y., or use the Request Card that is bound in at page 18. Circle No. 153.

Side-dump truck bodies—a bulletin describing Easton drop-door and pan-type side-door trailers for all-purpose off-highway hauling. Brief data on trailer trains. Photographs illustrate text.

Write to the Easton Car & Construction Co., Dept. C&E, Easton, Pa., or use the Request Card at page 18. Circle No. 154.

Dump trailers—a folder describing Hercules light, medium, and heavy-duty dump trailers designed to fit specific hauling applications. Shows steel and aluminum units of both frameless and frame-type design, in lengths ranging from 16 to 30 feet, and from 10 to 25 cubic yards in capacity. Data on optional equipment. Illustrated with photographs.

Write to the Hercules Steel Products Co., Dept. C&E, Gallon, Ohio, or use the Request Card that is bound in at page 18. Circle No. 155.

Pipe accessories—a catalog Smith-Blair clamps, couplings, dyes, fabrications, and adapters for types and sizes of pipe. Describes separate items, and covers all phases of repairing, coupling, and pipe lines. Generously illustrated with photographs, line drawings, and handy outside-diameter chart. Included.

Write to Smith-Blair, Inc., Dept. C&E, 535 Railroad Ave., South Francisco, Calif., or use the Request Card at page 18. Circle No. 156.

To obtain the literature described on this page, write to the manufacturer or circle the designated number on the Request Card at page 18.



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Automatic "Easy Up-Easy Down" hydraulic tilt deck only 33" high. Deck gently tilts to low load angle. Walking beam pivots on Timkin Bearings. No skids or blocks needed. Just the rig for D-4, D-5, TD-9, QD-12, pavers, and other loads. Exclusive breakdown-proof rear deck channel mounting.



Extra strong frame. Wiring enclosed. Other models 3 ton and up.

WRITE for catalog, prices, and name of nearest distributor.

1949 N. 121st St.
Milwaukee 13, Wis.

WISCONSIN TRAILER CO.

For more facts, use Request Card at page 18 and circle No. 414

FAST, TOUGH MIDDLEWEIGHT

... models C-209 and CP-209 by Concut ...

A medium sized unit with a capacity for large and difficult jobs ... Economical to buy and operate. Balanced, rugged design and low maintenance dependability are important "Cost Cutting" features of the versatile 209 series.

Ask your nearest Concut representative or write for additional information.



1845 Belcroft Ave., El Monte, Calif.



Designed for Small Equipment Budgets

AVAILABLE WITH HYDRAULIC OR MANUAL PROPELLING

distributed in the Mid-west by ...
CONCUT MID-AMERICA Inc., 5783 N. Lincoln Ave., Chicago 45, Ill.

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Campbell Cab for "Caterpillar" Tractor

D7-210 for D7 17A series tractor and D7-224 for D7 3T series tractor

WINDOWS—safety glass windows throughout. Sliding windshield glass.

CONSTRUCTION—all steel.

COLOR—painted yellow to match color of tractor.

DOORS—two heavy-duty sliding doors provide easy entrance and exit for the operator. Doors can be latched in an open or closed position.

MEASUREMENTS—

	D7-210	D7-224
length	56"	length 54"
width	65"	width 65"
height	58"	height 58"

OPTIONAL EQUIPMENT—windshield wiper, sun visor, locking handles, heater-defroster unit.

CAMPBELL DETACHABLE CAB CO.



• WAUCONDA, ILLINOIS

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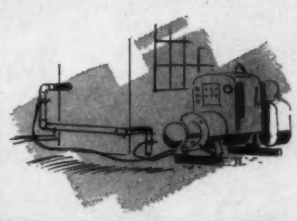
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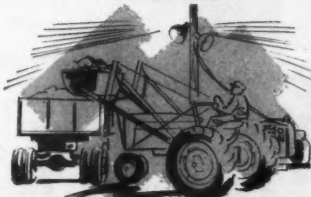
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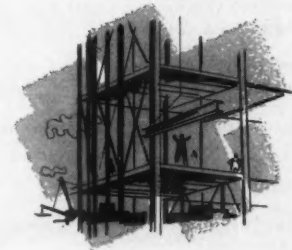
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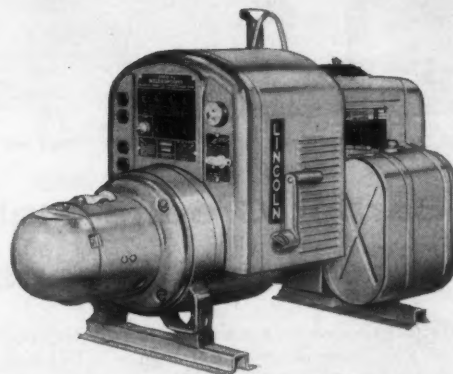


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Don't let any job wait!

POWERIZE YOUR SITE with LINCOLN WELDANPOWER



The portable power plant that welds
• 5 KVA 115 or 230 volts AC power
• 200 amp AC welding current

NO more waiting for power crews to rig temporary lines when you have a Weldanpower. This versatile machine powers tools, lights, heaters, pumps... lets you go to work anywhere when you're ready. Also generates up to 200 amps welding current for fabrications and repairs. Easily transported—weighs only 537 pounds. Powered by Wisconsin air cooled engine. Built by Lincoln—the world's largest manufacturer of arc welding equipment.

The World's Largest Manufacturer
of Arc Welding Equipment



THE LINCOLN ELECTRIC COMPANY, DEPT. 5328, CLEVELAND 17, OHIO

For more facts, use Request Card at page 18 and circle No. 418



A heavy steel beam, lifted off a rail car by a Lima 50-ton crawler crane, is swung into place atop the 1,312-foot-long Harrisburg Expressway Bridge near Lemoyne, Pa. Erection work was performed in between trains during periods of low-volume rail traffic.

Fast steel erection on bridge spanning seven railroad tracks

Steel erection work for the 1,312-foot-long Harrisburg Expressway Bridge near Lemoyne, Pa., was performed in between trains during periods of low-volume rail traffic. The bridge is part of a \$2.5 million contract awarded to Hempt Bros., Inc., of Camp Hill for 3.31 miles of 4-lane expressway between U. S. 15 in Camp Hill and the Susquehanna Expressway (U. S. 111) at Lemoyne.

Called Whitehall Crossing, the bridge contains 17 spans with 12 steel beams per span. A typical beam is 60 feet long, 36 inches deep, and weighs 11 tons. All connections are made with high-strength bolts; about 24,000 hold the 2,000 tons of steel together.

The bridge spans seven Pennsylvania Railroad tracks, two Reading Co. tracks, and U. S. 15. The structural steel was fabricated and erected by Bethlehem Steel Co. Erection work was completed in 4½ weeks.

Blacktop patch mixes and seal coats

Highway Research Board Bulletin 215, entitled "Bituminous Patching Mixtures and Seal Coats," contains two papers sponsored by two committees of the HRB's Bituminous Division, Department of Materials and Construction.

The first paper, on cutback-asphalt patching mixtures, presents some of the results of a research project of the University of Arkansas sponsored jointly by the Arkansas State Highway Department and the U. S. Bureau of Public Roads. This work was undertaken with the view of producing a cutback-asphalt mixture for use in highway patches.

The second paper, on seal coats, describes laboratory contributions toward better performance, describes methods relating to improvement of seal coats including development of tests, apparatus, materials, and application procedures. Diagrams, pictures, tables and graphs abound in the booklet.

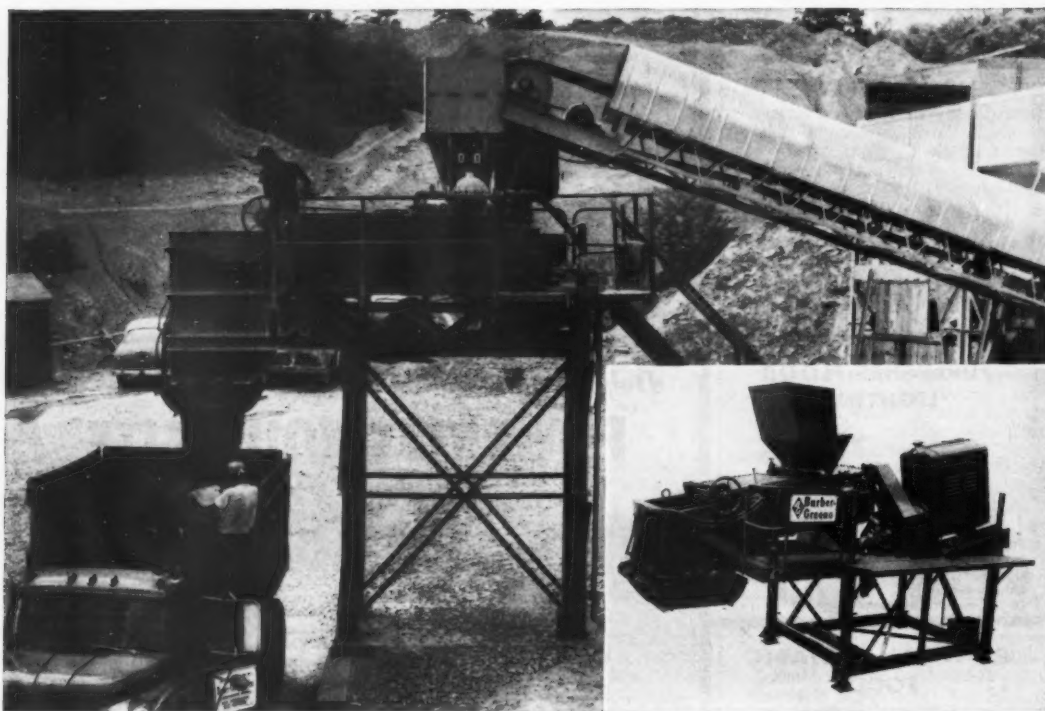
The 80-cent booklet may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Vermilya-Brown to erect hospital addition

A \$7½ million contract has been awarded to Vermilya-Brown Co., Inc., New York City, to construct a 10-story medical service building as an addition to Roosevelt Hospital, located in New York City.

The first seven floors of the building will be ready for occupancy in the spring of 1962, and the remaining five will be finished as future needs require. The exterior will be glass, pink face brick, porcelain enamel panels, and aluminum windows. The building will be fully air conditioned and high-speed elevators will serve upper floors. The structure will house clinical and pathology laboratories, research laboratory, eight operating rooms, and a full floor for obstetrics. Administrative, nurse, and volunteer quarters will also be provided.

CONTRACTORS AND ENGINEERS



One of the many high capacity Barber-Greene Model 828 Stabilization Plants now setting production records. Inset shows new Model 824.

New Barber-Greene Stabilization Plants provide record-setting capacity and economy

Cost-conscious contractors everywhere are meeting increased demands for base material with new high-capacity, low-cost Barber-Greene Stabilization Plants. These plants require less equipment and labor than "on-the-road" mixing methods... deliver greater accuracy in proportioning and water content... are less dependent on weather... consolidate material-handling.

Model 828 exceeds highest tonnage requirements of modern highway construction... new Model 824 offers ample capacity for applications where extremely high tonnages are not required, plus all the cost-cutting advantages of the Model 828.

Record production—many plants are producing over 600 tons per hour.

Twinshaft pugmill—assures fast, high-capacity mixing. Paddle tips are reversible, last longer.

Low maintenance—material forms its own mixing chamber... no liner plates to replace.

5-ton surge hopper—speeds truck loading... hydraulic clamshell discharge gate prevents segregation.

Adjustable dam gate—controls mixing time without changing capacity.

Easy erection—bolted structural support frames.

Wide variety of fines and aggregate feeding systems available. Diesel or electric power.

Ask for complete information

59-2-5



CONVEYORS...LOADERS...DITCHERS...ASPHALT PAVING EQUIPMENT

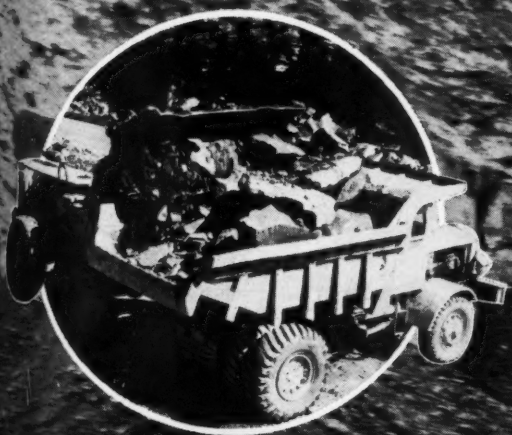
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CLEARs ENTIRE BLAST AREA IN MINUTES!



Trojan 404 Handles Shot Rock on Busy State Road — Keeps Traffic on the Move

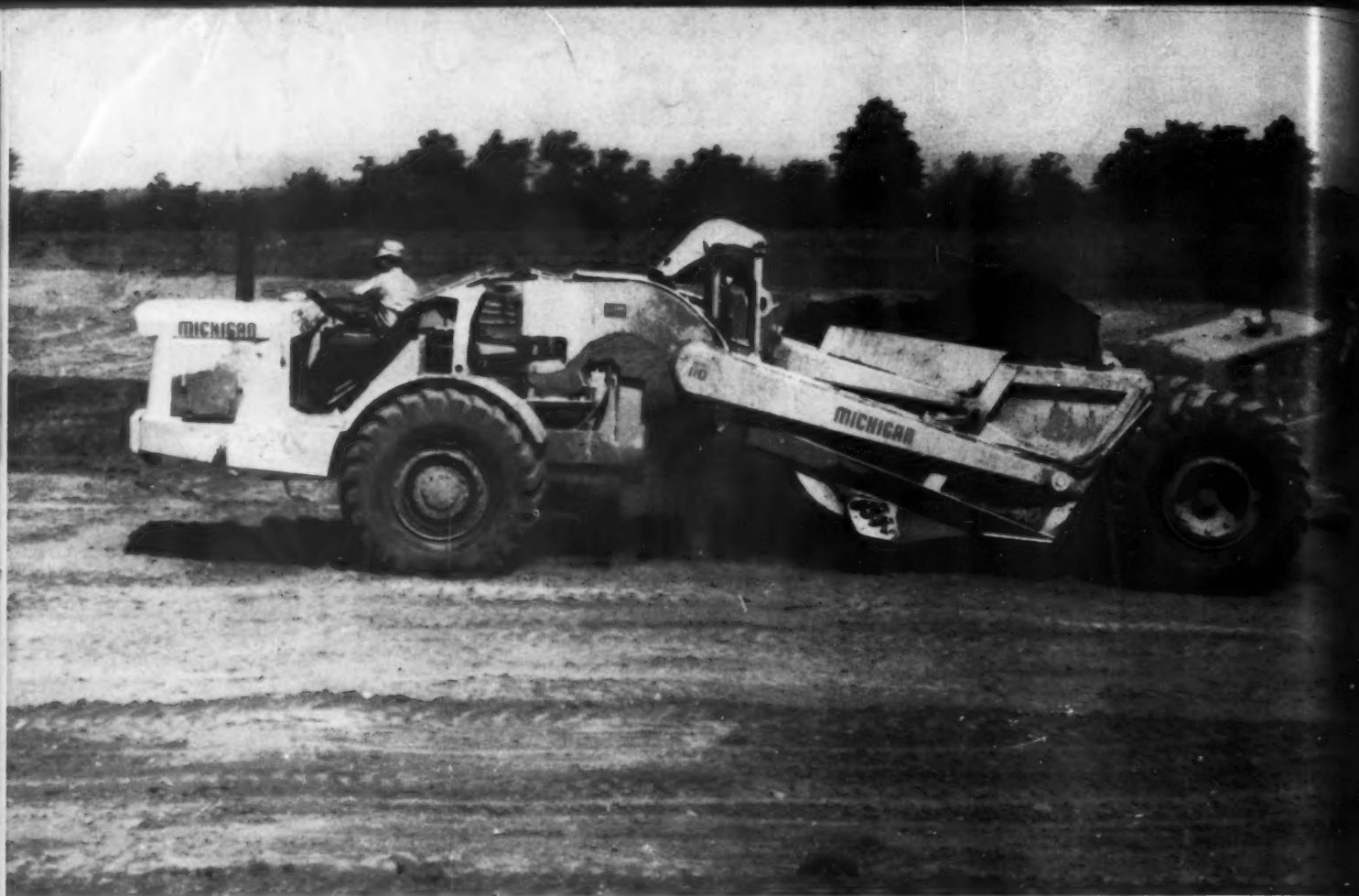
After each blast, move in fast — clear area — move out — keep traffic moving . . . The big 4 yard Trojan 404 is right at home when confronted with such a tight operating pattern . . . Working speed, along with strength and ability to handle heavy, heaped loads of shot rock, established the Trojan 404 as the most valuable piece of equipment on the job . . . The main objective was accomplished — no traffic tie-ups! This is another example of Trojan's proven job performance under exacting operating conditions . . . Ask your local distributor to demonstrate Trojan job ability.



TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

TROJAN DIVISION, THE YALE & TOWNE MANUFACTURING COMPANY • BATAVIA, N. Y.; SAN LEANDRO, CALIF.

For more facts, use Request Card at page 18 and circle No. 420



Operator training a problem?

Look how Michigan Scrapers licked it for this N.J. contractor

Take a look at the operators on Sallcon Incorporated's scrapers. You're liable to see a new man every week or two. The reason is the high cost of labor. Handling mostly small contracts, this Somerville (New Jersey) firm frequently finds it most economical to lay off men between jobs—then rehire when they go onto a new site. "In half a month's time," explains Jim Seibert, company president, "we may be forced to use two or more different operators per machine."

Clutching—none

"Under these conditions, it's naturally important to us that scrapers be as easy to operate and as easy to take care of as possible," continues Mr. Seibert. "We looked at them all . . . and decided on 10½ yard Model 110 Michigans. Their power steer, power shift, and torque converters take the effort out of moving dirt! New operators become pretty proficient after only a few cycles. Nobody wears away clutches, because there is no foot clutch. Gear selection is no longer critical; torque converter drive automatically balances speed and load."

"Michigan's hydraulic system is sim-

ple to master, also. The power train is easy to get at. What's more, based on our experience of last season, I feel Michigan 110's will prove extremely dependable over their entire working life."

Output—160 pay yds hourly on 500 ft cycles

Production has been very good! On a typical housing development job, cutting roadways, each Michigan averaged 20 loads per 50-minute hour. One-way hauls were approximately 250 ft. Loading, with 85 hp pusher, took 40 to 45 seconds. Payloads in clay averaged 8 bank yards.

On tougher jobs—cutting railroad sidings and excavating industrial basements, for example—the 162 hp Michigans frequently are teamed with a 140 hp pusher (which cuts load time to 25 to 30 seconds).

Self-loads satisfactorily

Occasionally they work alone, self-loading close to their 8 yd struck capacity.

In tight-quarter assignments—like

grading between houses and building driveways—their power steer and short turn radius speed cycles.

The machines drive everywhere under their own power. Speeds up to 31½ mph.

Check Michigan Scraper advantages on your job

Mobility, versatility, output—and ease of operation like this—we think, can help you too. For proof, we'd like to show you, first-hand, what Michigan Scrapers can do on the only job you *really* care about—*your own*! Let us bring a demonstrator to your work area. Let your own operators run it. Measure output. Compare performance. Then pick the size you need! Three models available, 10½, 19, 29 yds heaped.

CLARK EQUIPMENT COMPANY
Construction Machinery Division

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